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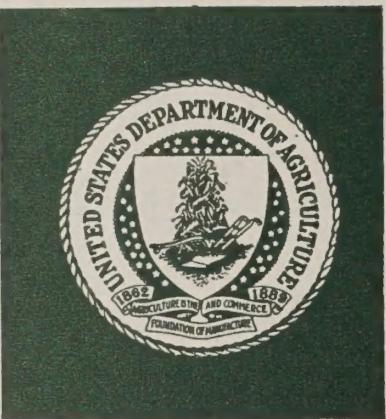
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An Annotated Index
of the holdings for the
GUAYULE EMERGENCY RUBBER PROJECT
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and the
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AN ANNOTATED INDEX
OF THE HOLDINGS FOR THE
GUAYULE EMERGENCY RUBBER PROJECT
at the
FEDERAL RECORDS CENTER, SUITLAND, MARYLAND
and the
NATIONAL ARCHIVES, WASHINGTON, D.C.

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Prepared and compiled by Clyde F. Reed in 1979 in fulfillment of Contract No. 54-9AHZ-8-1394 awarded to Reed Herbarium, Baltimore, Maryland, by Agricultural Research, Science and Education Administration, U.S. Department of Agriculture.

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Ms. Mary Cunningham
Chief, Information Retrieval and Distribution Branch
General Services Administration
National Archives and Records Service
Washington, D.D. 20408

(Phone: 202-376-8819)

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I. MATERIALS LOCATED AT FEDERAL RECORDS CENTER, SUITLAND, MARYLAND

1. Accession Number 67-A-4000 (14 boxes)

- A. Boxes 1-7. Deal with guayule alone. About 1,918 photographic prints and negatives; 288 2" x 2" slides, and 3 reels.
- B. Boxes 8-11 Deal with correspondence, experiments, field notes, and research records of the International Rubber Company purchased by Government at beginning of World War II.
- C. Box 12. Photos and prints dealing with Hevea brasiliensis and Cryptostegia.
- D. Box 13. Oilseed and Industrial Crops Research Branch--Hevea slides, 35 mm motion picture reels. 1941-1953. L. G. Polhamus.
- E. Box 14. Photos and color transparencies dealing with guayule culture; Hevea culture in Central America; 1 box of lantern slides from illustrations in USDA Technical Bulletin by M. H. Langford, June 30, 1944.

2. Accession Number 72-A-3148 (23 boxes)

- A. Box 1. Hearings, budgets, reports, records, and correspondence, 1948-1953; cooperation correspondence; final reports on Government tire test projects.
- B. Box 2. Patents, Inventory, Research, Reports, Correspondence, and some photographs.
- C. Box 3. Equipment, design and specifications; projects, research, and records; 5 papers on oil extraction.
- D. Box 5. Milling techniques and equipment, graphs, charts, photographs, correspondence. Many publications dealing with sampling, extraction, and assaying guayule rubber.
- E. Box 6. Publications dealing with genetics, milling and extraction, physiology, biochemistry and growing requirements of guayule; soil conditions; plant diseases; some annual reports and progress reports; abstracts of patents pertaining to recovery and refining of rubber from guayule - 1900 to 1945.
- F. Box 7. Experiments, patents, charts and graphs dealing with milling, worming and drying procedures; correspondence, photographs.

- G. Box 8. Experiments and correspondence dealing with analytical and physical testing of guayule; papers dealing with worm retting, betaine extraction, guayule bagasse; harvesting, baling, drying and curing techniques; ensilage storage, cold storage; Guayule, A List of References, USDA Library List No. 10; scientific publications dealing with guayule.
- H. Box 9. Administrative and research correspondence on guayule, Salinas, California; publications dealing with milling techniques, waxes and resins, essential oils; seedlings, effect of spacing, irrigation and fertilization; correspondence dealing with operation, experimental and developmental work on processing guayule rubber; guayule seed stockpiling.
- I. Boxes 10 & 11. Index to experiments of Intercontinental Rubber Company at Assay Laboratory, Salinas, CA.
- J. Box 13. Published articles dealing with guayule; reports, charts, graph and blue prints; correspondence.
- K. Box 14. Eastern Regional Research Laboratory. Correspondence dealing with equipment, experiments, reports, legislative action, graphs and tables; reports of Guayule Rubber Extraction Research Unit, 1943-1944.
- L. Box-tube 17. Guayule Rubber Project drawings.
- M. Box 18. Research notebooks, 1944-53.
- N. Box 19. Research notebooks, 1942-1945; tensile sheets, flotation experiments; chemical and physical properties; deresination.
- O. Box 20. Record and sample books; experiments and experimental record books; physical testing; milling and resin fractionation.
- P. Box 21. Research record books.
- Q. Box 22. Research notebooks; Tables of Contents for nine books of experimentation.
- R. Box 23. Experiments, correspondence, reports and inventories, Series G-2, Line Projects, costs, closing of work at Salinas, list of publications and authors.
3. Accession No. 72-A-1880 (37 boxes), but only the following contain material concerning guayule
- A. Box 1. Seven publications in this box deal with guayule: Guayule Monograph, Scientific Research in Russia; Cyto-embryological studies; development of inflorescences; seedling stockpiling; recovery of rubber; control of weeds in guayule seed beds; Guayule, An Emergency Source of Rubber, a USDA publication.

- B. Box 2. Parthenium argentatum (1905-1926), research, reports, and correspondence; many publications dealing with production, cultivation, utility, history and morphology of guayule; newspaper clippings, magazine articles about guayule; diseases and insects.
- C. Box 3. Research, Indicator Plots in Arizona, Southern California, and Southwestern New Mexico.
- D. Box 9. Research, reports, and correspondence; guayule rubber production; insect pests; pollination; test plantings in Texas, distribution of seeds and seedlings; disposal of inventory of Mexican guayule project.
- E. Box 14. Correspondence and research dealing with Inter-American Development Corporation; Chile, Argentina, Uruguay, Mexico; Bard Mexa (Calif.) Report-1928; and progress reports of Pearsall, Texas.
- F. Box 15. Reports, research notes, correspondence, costs, and photographs; stockpile program and maintenance; 13 Progress Reports of Research on Strategic and Critical Agricultural Materials-Development of Sources of Rubber (Nov. 1947-Nov. 1953).
- G. Box 16. Research, correspondence, and reports dealing with Special Guayule Research Program, 1946-1953; seed stockpiling; research in Texas and Mexico; estimates, budgets, and costs for guayule project, 1943-1947.
- H. Box 17. Research, correspondence, reports, tables, charts, and illustrations; mowing (pollarding) as possible harvest method; cost of production; breeding and disease investigations; guayule production prior to 1942; growing guayule in South America and U.S.S.R.
- I. Box 18. Quarterly Report of War Activities-Rubber Plant Investigations; research; correspondence.
- J. Box 36. Reports, research, and correspondence; Final Report for Experimental Unit at Yuma, Arizona; publications dealing with pathology, diseases, and insects of guayule; Bibliography and reference list dealing with guayule.

II. MATERIALS LOCATED AT NATIONAL ARCHIVES, WASHINGTON, D.C.

1. Farm Machinery Division, Bureau of Plant Industry

- A. Box NA-533. Field production machinery development; guayule harvester; topping machine; guayule nursery bed; Annual Reports for 1942 and 1943 for Guayule Emergency Rubber Project; financial statements; cooperative agreement with Forest Service.

- B. Box NA-534. Emergency Rubber Project, seed and nursery operations notebook; plantation and irrigation practices; photographs taken at Salinas.
- C. Box NA-535. Expanded guayule research program, 1950-51; Farm Machinery Progress Report; Photographic Album, Feb. 1-June 15, 1951 (57 photos); colored slides of guayule project, 1943.
- 2. Records of Forest Service (Record Group 95). Lot #20, 83 boxes of correspondence, reports, and publications
 - A. Boxes 1-11. Bakersfield correspondence, contracts, machinery, blueprints.
 - B. Box 12. Diseases of guayule, insect pests.
 - C. Box 12(in part)-19. Cooperation. Correspondence, contracts, indicator plots, cooperative relationships and programs, 1942-1946 (about 9,000 pages).
 - D. Boxes 20-23. Finance Estimates, 1942-1946.
 - E. Box 23 (in part). Harvesting data, 1943-1946.
 - F. Boxes 23-25. Information: press releases, clippings, 20 folders of newspaper clippings.
 - G. Box 25(in part). Information: Historical Legislation.
 - H. Box 27-31. Reports, technical information, photographs of cultivation; individual field records.
 - I. Box 32. Inspection, Management and Inspection of Supervision 1944-45; irrigation data.
 - J. Boxes 33-34. Legislative History and Legislation; Hearings, Appropriations; Anderson Resolution, 1944.
 - K. Boxes 35-36. Plans, objectives; programs submitted to Rubber Director; guayule research programs; expansion; liquidation.
 - L. Box 37. Planting information; general, equipment, soils, Holland planting machine; protection of wild guayule in Big Bend Country.
 - M. Box 38. Resources: general, natural; seedlings; seed sources and certification of seeds.
 - N. Boxes 39-40. Sales. Rubber Bagasse Prices; sales of seeds, seedlings storage, disposal of excess seed supply.
 - O. Boxes 41-42. Statistics-General 1942-1946; Land Status Records; Publications.

- P. Box 43. Supervision: Committees, Cost-project cost-keeping information; personnel coordinating committee.
 - Q. Box 43(in part)-44. Wild Shrub Obligation Report; reports and correspondence (about 1,450 pages)
 - R. Boxes 45-56, 58-80. Harvesting and yield data.
 - S. Box 57. Tract maps.
 - T. Box 81(in part). Personnel - Efficiency Ratings.
 - U. Boxes 81(in part)-83. Land: Gross Appraisals, Maps; Master list of land leases, 1942-43.
3. Records of Forest Service (Record Group 95). Lot #74. Records for Development of Watershed Management, 1939-1950. Boxes 911-954.
- A. Boxes 911-912. Congressional Material; Document 205; USDA Appropriation for 1951; Senate Res. 224; Final Report ERP, December 1946.
 - B. Box 913. Assay Methods--Guayule. 1943-46.
 - C. Box 914. Control: Diseases, Insects, Weeds, General.
 - D. Boxes 914(in part)-919. Cooperation, Correspondence, Contracts, reports.
 - E. Boxes 919(in part)-920. Extraction-Milling; correspondence; report on Jordan Mills and Small Pebble Type Mills.
 - F. Boxes 920(in part)-925. Finances: estimates, disbursements, allotments; fiscal control.
 - G. Box 925(in part). Harvesting; costs, reports-Texas wild shrub.
 - H. Box 926-932. Information: Press releases, photographs, speeches, censorship, references, radip; correspondence; land disposal.
 - I. Boxes 933-34. Land leasing and purchases, 1943-45; legislation, bills, and reports; appropriations.
 - J. Boxes 935-37. Legislation dealing with ERP: House and Senate Bills, Hearings.
 - K. Box 938. Mill Operation--general, layout of factories.
 - L. Box 939. Nurseries: General, 1942-45; seedlings, weed control; construction.

- M. Box 939(in part). Organization of ERP: diagram, organization chart.
 - N. Box 939(in part). Patents: General, 1942-46, copies of patents, correspondence.
 - O. Boxes 939(in part)-941. Plans: objectives, liquidation, research and development.
 - P. Boxes 941(in part)-942. Planting: general, processing, planting areas and maps.
 - Q. Box 942(in part). Property and quarters.
 - R. Box 943. Resources of guayule; sales of rubber, seeds, and seedlings.
 - S. Boxes 943(in part)-944. Seed tests, sowing investigations; production costs.
 - T. Boxes 945-946, 948. Statistics about guayule production.
 - U. Boxes 949-952. Supervision: passports; general guayule 1942-46; Poage Committee Investigation; Trumbull Committee.
 - V. Box 953. Supply of guayule, 1942-45; correspondence.
 - W. Boxes 953(in part)-954. Surveys: soil survey maps, 1943-43; special surveys for mill sites.
 - X. Box 954(in part). Yields: general, 1942-46; correspondence, charts and tables.
4. Records of Forest Service (Record Group 95). Nos. 154-156
- A. No. 154. Photographic negatives relating to the Emergency Rubber Project, 1941-1945. (900 film negatives)
 - B. No. 155. Mounted photographs relating to the Emergency Rubber Project, 1941-45. (300 mounted prints)
 - C. No. 156. Lantern slides relating to the Emergency Rubber Project, 1941-45. (561 colored slides)

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Lot No. 67A4000

Boxes 1-11 deal with Guayule alone; boxes 1-7 contain 1918 photographic prints and negatives, mostly prints; 288 2"x 2" slides; and 3 reels.

- Box 1 -- 13 bundles of printed pictures (566 items) 46 pages
5 lots of lantern slides
2 envelopes of charts, survey maps, tracings
3 bundles of negatives
- Box 2 -- 1013 2" x 2" lantern slides (288 items) 23 pages
7 bundles of printed pictures
3 rolls of movie film
- Box 3 -- Printed pictures (314 items) 16 pages
- Box 4 -- 7 bundles of printed pictures (314 items) 29 pages
Photographic Album -- Guayule Production Project,
eb 1 - June 15, 1951, Salinas, Calif 57 plates
- Box 5 -- 7 bundles of photo prints and negatives (343 items) 33 pages
About 100 prints of various stages of guayule
culture, unidentified
- Box 6 -- 12 bundles of printed pictures (about 400 items) 29 pages
- Box 7 -- 5 bundles of printed pictures (about 135 items) 12 pages
Correspondence relating to guayule research.
1 copy, USDA, Tech Bull No 1327 (1965), by
Hammond and Polhamus
- Boxes 8-11 contain 10,938 pages of Experiments, correspondence
and records
- Box 8 -- Experiments, lab file, Field notes; research records of
International Rubber Company, purchased by Government at
beginning of World War II (About 50 items, and 1700
pages of material)
- Box 9 -- Experiments, correspondence, Reports, Records (about 70
items, and about 3033 pages of material)
- Box 10 -- Experiments, Correspondence, Reports, Records (About 33
items, and about 3039 pages of material).
- Box 11 -- Correspondence, Experiments and Records. (About 55 items,
and 3166 pages of material).

Box 12 -- 9 bundles of photographs dealing with culture of Hevea,
Cryptostegia, Kok-saghyz, a few guayule. (About 780 items).

79 pages

Box 13 -- Oilseed and Industrial Crops. - Hevea slides, 35 mm. motion
picture film -- 1941-1953, by L.G. Polhamus

Box 14 -- Photographs, Transparencies, reels and lantern slides dealing
with Hevea and guayule culture.

- Circle Ranch photos. Carver-Bowen.

- R-45, Perry, Pl. 4,2.

- Root cuttings (Forest Service Area), Set November 22, 1943 & Photographed January 5, 1944. Twenty representative cuttings, 45 days after setting. All have developed shoots and roots in varying degree. Cuttings were laid horizontally in shallow furrow and permitted to callous in the ground. Many of the smaller roots were broken in lifting the cuttings from the soil.

- Growth and root development of cutting set November 23, 1943, photographed January 31, 1944.

- Relative growth of kok-saghyz from seed planted November 22, 1943. From spacing test - - plot in foreground has been thinned to 12 plants per foot. (width between rows 16 in., length of row 15 ft.).

- Spacing test on Forest Service Area. Each plot consists of four rows with the stake on the first (left) row of each plot. After being damaged by cut worms, stands in the two center rows were reinforced by spot-seeding and by transplanting. Plots were planted on November 20, 1943. Photographed on December 30, 1943.

- Root cuttings (Forest Service Area). Set December 22, 1943 and photographed January 5, 1944. Twenty representative cuttings, 14 days after setting.

- Growth and root development of representative cuttings set December 23, 1943, photographed January 31, 1944.

- Cutting bed No. 3, set December 5, 1943. Photographed January 31, 1944. (width between rows, 16 in.).

- Root cuttings (Forest Service Area). Set December 4, 1943 and photographed January 5, 1944. Twenty representative cuttings, 30 days after setting. Note rotting cutting (fifth from left - top row). Also, the cutting with two shoots (sixth from left-top row).

- Growth and root development of cuttings set December 4, 1943, photographed January 31, 1944.

- Prolific flowering of Kok-saghyz - - 132 flowers were counted on this plant. Transplant set November 22, 1943. Photographed January 31, 1944.

- Transplant from Plot 5, set November 22, 1943. Photographed January 31, 1944.
- Showing relative size of transplant from Plot 6, set November 22, 1943. Photographed January 31, 1944. (Spread 18 in., Height 7 in.).
- Lot No. Kl-12, Madison, Wisc., Agri. Expt. Sta., Univ. of Wisc., Red Sugars, A.E. and B.E. analyses.
- Madison, Wisconsin, Russian dandelion (Taraxacum kok-saghyz Nodin.) adaptation test. In cooperation with U. S. Department of Agriculture. Figure 1. Two months old Russian dandelion rosettes. Photographed August 7, 1942. Flowering plants in center. Figure 2. General view of Russian dandelion planting on the West Hill Farm, Madison. Photographed September 23, 1942. Note fall seeding at left which has been made between the rows of the spring seeding.
- Russian dandelion, Wyoming Agric. Expt. Station, Laramie, Wyoming, 1942.
- Russian dandelion, Wyoming Agric. Expt. Station, Laramie, Wyoming, 1942.
- Laramie, Wyoming, July 1, 1942 - Close-up view of Morrison plot. (1a)
- Laramie, Wyoming, July 1, 1942 - Close-up view of Morrison plot. (1b)
- Laramie, Wyoming, General view of campus soil plot, July 1, 1942. (2a)
- Laramie, Wyoming, Close-up view of campus soil plot. July 1, 1942. (2b)
- Laramie, Wyoming, Close-up of Morrison plot, August 1, 1942. (3a)
- Laramie, Wyoming, August 1, 1942, general view of Morrison plot. (3b)
- Laramie, Wyoming, August 1, 1942. General view of Campus soil plot. (4a)
- Laramie, Wyoming, Close-up of Campus soil plot, August 1, 1942. (4b)
- Laramie, Wyoming, September 1m 1942. Kok-saghyz, Morrison plot, General view. Res. Chem. Department. (5a)
- Laramie, Wyoming, September 1, 1942, Morrison plot, close-up. (5b)

- Laramie, Wyoming, Botany Garden, October 1, 1942. (6a)
- Laramie, Wyoming, Botany Garden, October 1, 1942. (6b)
- Laramie, Wyoming, Botany Garden, October 1, 1942. (7a)
- Laramie, Wyoming, Botany Garden, October 1, 1942. (7b)
- Louisville, Kentucky, Research and Development Department, Kok-saghyz seedling removed from the laboratory test box. The main root is 1 3/4 inches long. 1942. (8a)
- Louisville, Kentucky, Research and Development Department, Planting made at greenhouse located at Cane Run Road and Algonquin Parkway. Twenty days after planting. (8b)
- Louisville, Kentucky, Research and Development Department, Laboratory Test, 1942. (9a)
- Louisville, Kentucky, Research and Development Department, Kok-saghyz seedlings in cold frames at the greenhouse, July 30, 1942. (9b)
- Louisville, Kentucky, Research and Development Department, Kok-saghyz experimentation showing leaf types, October, 1942. (10a)
- Louisville, Kentucky, Research and Development Department, Kok-saghyz experimentation showing leaf types, October, 1942. (10b)
- Louisville, Kentucky, Seagram Research and Development Department, Kok-saghyz experimentation showing leaf types, October, 1942. (11a)
- Louisville, Kentucky, Seagram Research and Development Department, Kok-saghyz experimentation showing leaf types, October, 1942. (11b)
- Russian dandelion, Ford Motor Co., Dearborn, Mich., 10/12/42.
- Kok-saghyz, Ford Motor Co. Experimental Gardens, Dearborn, Mich., 9/5/42.
- Kok-saghyz, Ford Motor Co., Experimental Gardens, Dearborn, Mich., 9/5/42.

- Kok-saghyz, Ford Motor Co. Experimental Gardens, Dearborn, Mich., 9/5/42.
- Ford Motor Co., Dearborn, Mich., Russian dandelion, October 12, 1942.
- Lot. No. Kl-18, Lansing, Mich. Hort. Department, Red. Sugars, A.E. and B.E. analyses.
- East Lansing, Michigan, Kok-saghyz on July 29, 1942. Planted May 23, 1942.
- East Lansing, Michigan, Kok-saghyz on July 29, 1942. Planted May 23, 1942.
- Russian dandelion on muck soil, 1942, East Lansing, Michigan.
- East Lansing, Michigan, Kok-saghyz on July 29, 1942. Planted on May 23, 1942.
- Lot No. Kl-9, Manistique, Mich., Deloria; Wyman Nursery, Red. Sugars, A.E. and B.E. analyses, 1942.
- Lot No. Kl-11, St. Paul, Minn., Steinbauer, USDA Plant Field Lab., 1942, Red. Sugars, A.E. and B.E. analyses.
- Lot. No. Kl-13, Bozeman, Mont., Mont. Expt. Sta., 1942, Red. Sugars, A.E. and B.E. analyses.
- Bozeman, Montana, Ground level between plot 2 (vernalized wet) on the left and plot 3 (vernalized dry) on the right. About August 1, 1942. (12a)
- Bozeman, Montana, Plot 1 (dry seed) about August 1, 1942. (12b)
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- Bozeman, Montana, Plot 2 (vernalized wet) September 11, 1942. (14b)
- Bozeman, Montana, Plot 3 (vernalized dry) September 11, 1942. (14c)

- Lot No. Kl-14, Lincoln, Nebr., Kiesselbach, Agr. Expt. Station, 1942, Red. Sugars, A.E. and B.E. analyses.
- Lancaster, PA, Tobacco Substation, Probably early September, 1942. (Kok-saghyz seed presumably). Mr. Michael Nuttonzon (U.S.D.A.).
- Lancaster, PA, Tobacco Experimental Laboratory, Probably early September, 1942. (15a)
- Lancaster, PA, Tobacco Experimental Laboratory, Probably early September, 1942. (15b)
- Lancaster, PA, Tobacco Experimental Laboratory. Probably early September, 1942, Mr. Michael Nuttonzon (U.S.D.A.).
- Lancaster, PA, Tobacco Experimental Laboratory, Sample G-1 at digging 11/25/42.
- Lot No. Kl-15, Brookings, S. D., S. D. State College, Hort. Department, McCrory, 1942, Red. Sugars, A.E. and B.E. analyses.
- Lot. No. Kl-16, Brookings, S. D., S. D. State College, Hort. Dept., 1942, Red. Sugars, A.E. and B.E. analyses.
- Lot No. Kl-17, Brookings, S. D., McCrory, Hort. Dept., S. D. State College, 1942, Red. Sugars, A.E. and B.E. analyses.
- Brookings, S. D., June 15, 1942. (16a)
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- Ames, Iowa, July 1, 1942. (18b)
- Ames, Iowa, August 1, 1942. (19a)

- Ames, Iowa, August 1, 1942. (19b)
- Manhattan, Kansas, Kansas Agricultural Experiment Station, Department of Agronomy "Progress Report on Taraxacum kok-saghyz plantings". Photo 1. Taraxacum kok-saghyz planted June 3 -- photographed August 4, 1942. Photo. 2. Planted June 3, 1942. A few rows in extreme right of picture planted May 28. Photographed August 4, 1942.
- Lot. No. K1-10, Ames Iowa, Steinbauer, Iowa Expt. Station, 1942, Red Sugars, A.E. and B.E. analyses.
- Urbana, Illinois, Kok-saghyz, August 6, 1942.
- Citrus Expt. Station, Riverside, CA, 1942. (Note differences in shape of leaf).
- 18A shows damage caused by too close cutting of tops. Latex has exuded forming scabs of solid rubber.
- Fairbanks, Alaska, Kok-saghyz plant, September 10, 1942.
- Mesa, Arizona, 1942, Keda I. North and south exposures. (20a)
- Tucson, Arizona, 1942, south and north exposures. (20b)
- Mesa, Arizona, IIIM, December 20, 1942.
- Mesa, Arizona, Blooms in 4th clump east of site in south row (toward camera at right). (21a)
- Mesa, Arizona, IIM, December 20, 1942. (21b)
- Tucson, Arizona, IIIT, December 11, 1942. (22a)
- Tucson, Arizona, IIT, December 11, 1942. (22b)
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- Tucson, Arizona, IT, December 11, 1942. (23b)
- Kok-saghyz weeding on peat soil, Gleason Field, Aitkin County, Minn. Photo by R. D. Lewis, August, 1943.

- Forestry area, Belle Glade, Fla., B.P.I. Research plots at upper right. 2/20/44.
- Plant taken from cutting bed, 3/8/44, Belle Glade, Fla.
- Infected plant in transplant bed, 3/8/44, Belle Glade, Fla.
- Forestry area, Belle Glade, Fla., March 10, 1944.
- Forestry area, Belle Glade, Fla., 2/20/44.
- Sur-rane sprinkler on B.P.I. plots, Belle Glade, Fla., 2/18/44.
- Kok-saghyz growing on peat soil, State Field, Aitkin County, Minn. Photo by R. D. Lewis, August, 1943.
- Kok-saghyz, State Field, Aitkin, Minn. Right fertilized, left untreated. Photo by R. D. Lewis, August, 1943.
- Kok-saghyz in peat soil. Left, no fertilizer, right, 500# 3-9-27 per acre; left unfertilized. State Field, Aitkin County, Minn. Photo by R. D. Lewis, August, 1943.
- Kok-saghyz weeding on peat soil, Gleason Field, Aitkin County, Minn. Photo by R. D. Lewis, August, 1943.
- Kok-saghyz growing on Beardin loam soil, Clay County, Minn. A. Skolness Farm. Photo by R. D. Lewis, July, 1943.
- Kok-saghyz growing on Beardin loam soil, Clay County, Minn. A. Skolness Farm. Photo by R. D. Lewis, July, 1943.
- Kok-saghyz growing on Beardin loam soil, Clay County, Minn. A. Skolness Farm. Photo by R. D. Lewis, July, 1943.
- Nicollet National Forest, Rhinelander, Wisconsin, typical plants of kok-saghyz sown in late May, 1942, at Rhinelander Nursery, using untreated seed. August 5, 1942.
- Cass Lake, Minn., In sowing the kok-saghyz, difficulties were encountered in regard to depth of sowing. Much of the slow germination and slow growth

must be attributed to this. This Planet Jr. attachment seems to be best suited for this purpose. June 1, 1942. In 1943, units planting 8 rows at a time were used.

- Cass Lake, Minn. Its (Planet Jr.) three most outstanding advantages are: 1) it can be set at any desirable spacing on the drawbar, 2) it can be adjusted to sow at any desired depth, 3) it can be adjusted to sow at any density required. For kok-saghyz, it was found the seeding must be so shallow as to barely cover the seed. This can be done by setting the seeder so that the drill shoe barely touches the ground. The flexible covering device and the rear packing rollers will then cover sufficiently. June 1, 1942.
- Cass Lake, Minn. The "Farmall" with its various detachable equipment proved most useful for this purpose. July 10, 1942.
- Cass Lake, Minn. The plants are flowering more vigorously in the Cass Lake Nursery than in any of the two other nurseries. August 4, 1942.
- Cass Lake, Minn. Repeated hand cultivations between rows had to be undertaken while the plants were too small to be seen from a tractor. The competition between kok-saghyz and weeds was still severe. June 15, 1942.
- Cass Lake, Minn. After the weeds had been picked, the rows of kok-saghyz stood out rather distinctly. July 10, 1942.
- Cass Lake, Minn. A hand-pushed type of applicator was used in areas where the width of rows differed. July 28, 1942.
- Cass Lake, Minn. After the weeding had been completed during the last part of July, it was decided to apply approximately 175 lbs. commercial fertilizer per acre. The mixture consisted of 112.5 lbs. superphosphate (20%), 37.5 lbs. Nitrogen (ammonium sulfate 20%) and 28 lbs. potash. The fertilizers were applied in liquid form and mixed in this bean sprayer. July 28, 1942.
- Cass Lake, Minn. The liquid was led to a pipe mounted beneath the driver. Holes were spaced in the pipe so as to throw the streams on each side of the rows. Guards were placed on the pipe so as to prevent the fertilizer from splashing on the plants. July 28, 1942.
- Cass Lake, Minn. In the experimental sowing, the fertilizers were applied dry by help of a Planet Jr. July 28, 1942.
- Cass Lake, Minn. Since the hand cultivators left rather wide strips, a knife-like tool was devised for the purpose of cutting the weeds close

to the plants. July 1, 1942.

- Cass Lake, Minn. The instrument straddled the rows, cutting the weeds 1/2" under the surface, leaving only a 2/3" wide strip. Girls at left are hand weeding in the rows. July 1, 1942.
- Cass Lake, Minn. The remaining weeds in these now narrow rows had to be picked by hand. July 1, 1942.
- Cass Lake, Minn. After the hand weeding had been completed, the now clearly visible rows could be cultivated by help of tractor-drawn equipment. July 10, 1942.
- Cass Lake, Minn. The original experimental seedings of differently treated seed were replicated in the experimental nursery where the soil is somewhat heavier. This picture was taken on August 4, about 10 weeks after seeding. It shows untreated in the foreground and vernalized moist in the background. The size of plants and density is no better than in the Lydick Nursery as yet. August 4, 1942.
- Cass Lake, Minn. Stand in general in the Lydick Nursery. Several flowers and buds are now present. August 4, 1942.
- Cass Lake, Minn. A fertilizing and thinning experiment was initiated in the experimental seeding of vernalized-dry seed. This area was chosen because of its uniformity. August 4, 1942.
- Cass Lake, Minn. This seeding of vernalized-dry shows, as in the Lydick plot, much larger plants and better density than any other seeding. The fertilizer experiments, as well as the thinnings initiated in the Lydick Nursery, were replicated in this plot. Taken in the Experimental Nursery. August 4, 1942.
- Cass Lake, Minn. Although most germination took place within two weeks, the seedlings didn't seem to grow much during the following three weeks. As a result, the weeds soon covered the areas and hid the small kok-saghyz plants.
- Cass Lake, Minn. Close-up on August 4 of flowering plants in Cass Lake Nursery. A certain amount of seed is now being collected daily. August 4, 1942.
- Cass Lake, Minn. Gathering seed by hand. Same as 423386.
- Cass Lake Nursery, Chippewa National Forest. Kok-saghyz plants. End of first growing season. September, 1942.

- St. Paul, Minn. Six stages of flower and seed head development of Taraxacum kok-saghyz. Same as 422422 but different background. July 31, 1942. Seed should be picked at stages 5 and 6 if possible but for hand harvest it is necessary to pick as early as stage 4.
- Cass Lake, Minn. Gathering seed by hand. Same as 423386.
- Cass Lake, Minn. Chippewa National Forest. Kok-saghyz seed on drying trays. Chippewa National Forest, Cass Lake, Minn. September, 1942.
- Lot No. Kl-5, Missoula, Montana. Bradner; Northern Rocky Mt. Forest & Expt. Station, Red. Sugar, A.E. and B.E. analyses.
- Missoula, Montana, Forest Service. Irrigable land prepared and floated and packed, ready for Fall seeding of kok-saghyz at Forest Service Target Range project on irrigated land near Missoula. (24a)
- Missoula, Montana, Forest Service. Beet lifter used in kok-saghyz harvest at Missoula. Forest Service Target Range planting. (24b)
- Missoula, Montana. Beet lifter used to plow out kok-saghyz. (25a)
- Missoula, Montana. Picking up kok-saghyz roots at Missoula. (25b)
- Missoula, Montana. Kok-saghyz seed balls drying in tray at Missoula, indoors, before separation which was done by forcing seed through fine screen. (26a)
- Missoula, Montana. Cleaning kok-saghyz seed at Missoula for fall planting. (26b)
- Lot No. Kl-6, Missoula, Montana. Bradner; Northern Rocky Mt. Forest & Expt. Station, Red. Sugar, A. E. and B. E. analyses.
- Missoula, Montana. Roots were picked up and thrown into boxes after lifter went through field. Boxes loaded on trucks and hauled to headquarters where plants were topped with knife by hand, 1942. (27a)
- Missoula, Montana. Roots drying in tray indoors. (27b)
- Cass Lake, Minn. Hand-type Plant Jr. seeders were used to fill in spaces not reached by the tractor-drawn seeder, June 1, 1942.

- Lot No. Kl-7, Cass Lake, Minn. Zion, Lake States Expt. Station, Red. Sugars, A.E. and B.E. analyses.
- Cass Lake, Minn. Photographs contained with report of August 14 on Form B. 3 photographs of plots of kok-saghyz at Cass Lake.
- Lot No. Kl-4, Cass Lake, Minn. Knudson, U. S. Forest Service, Red. sugars, A.E. and B.E. analyses.
- Lot No. Kl-3, Cass Lake, Minn. Zion, Lake States Forest Expt. Sta., Red. sugars, A. E. and B. E. analyses.
- Lot. No. Kl-2, Cass Lake, Minn. Knudson, U. S. Forest Service., Red. sugars, A.E. and B.E. analyses.
- Lot No. Kl-1, Cass Lake, Minn. Steinbauer, Lake States Expt. Sta. Red. sugars, A.E. and B.E. analyses.
- Lot No. Kl-8, Cass Lake, Minn. Zion, Lake States Expt. Station, Red. sugars, A.E. and B.E. analyses.

- Direct seeding, Salt Lake, January, 1945.
- Expt. #2, Salt Lake.
- Experiment No. 11, Salt Lake, January, 1945.
- Expt. #9, Salt Lake.
- Expt. #11, Salt Lake. Drill planted, view across the rows.
- Linn, Expt. #2.
- General view, Salt Lake.
- General view, Salt Lake, south block.

- C-3, Fig. 1.

- C-61, Illus. 2.

- C-60.

- C-61, Illus. 1.

- C-59.

- C-71.

- C-68.

- C-70, Illus. 1.

- C-81.

- C-70, Illus. 2.

- C-4, Fig. 2.

- C-5.

- C-6.

- C-4, Fig. 1.

- C-80.

- C-61, Illus. 3.

- C-72.

- C-79, Illus. 2.

- C-73.

- C-74, Illus. 1.
- C-74, Illus. 2.
- C-78.
- C-79, Illus. 1.
- C-56, Illus. 2.
- C-58, Illus. 1.
- C-54.
- C-55, Illus.
- C-58, Illus. 2.
- C-56, Illus. 1.
- C-55, Illus. 2.
- C-6, C-80: 14-, C-80: 2, C-80: 3, C-80: 4, C-80: 5, C-81.
- C-59, C-73, C-74:1, C-74:2, C-78, C-79:1, C-79: 2.
- C-54, C-55:1, C-56:1, C-56, C-58:1, C-58:2.

- Rio 50, 10/26/45, Soil sick area, 3 yr. old plants, Sleeth.
- Rio 50, 10/26/45, diplodia-infected 3 yr. old guayule, Sleeth.
- Rio 50, 10/26/45. Salt or soil sick area with diplodia infection. Note isolated live plants among dead ones. Sleeth.
- Rio 50, 10/26/45, 2 yr. old shrub next to 3 yr. old shrub which is nearly dead. Sleeth.
- Rio 50, Expt. 1., 11/15/45, shallow or spreading type of root system on diseased area. Sleeth.
- 3 year old guayule plant from Rio 50 C8xp.1. (Disease area - root disturbance). Note shallow spreading root system. A member of the roots which penetrated more than 3 feet in depth were necrotic to within 20 inches of the surface.
- Rio Grande City indicator plot, 10/31/45. Branches of badly stressed guayule plant increase by termites with soil. Sleeth.
- Rio 50, 10/26/45. Soil sick area of 3 yr. old plants also infected with diplotia. Sleeth.
- Rio 50, 11/15/45. 3 yr. old plant from soil diseased area. Note type of roots. Sleeth.
- Rio 50, 11/15/45. 3 yr. old plant from soil diseased area. Note type of roots. Sl.
- Rio 50, 11/15/45. 3 yr old plant from soil diseased area. Note root system. Sleeth.
- Rio 50, Exp. 1. A 3 yr. old recovered from a summer defoliation. Some branches failed to recover. The root system tended to be shallow and replenishing. December, 1945. Sleeth.
- Rio 50, Exp. 1. Exposed root system of a 3 year old guayule plant from the sick area on the Rio 50. December, 1945. Sleeth.
- Rio 50, Exp. 1. Branch of a 3 year old guayule plant that was defoliated during the summer of 1945 and which has partly recovered. From the diseased area on Rio 50, soil condition? December, 1945. Sleeth.

- Rio 50, Exp. 1. Branch of a 3 year old guayule plant that has recovered from defoliation during the summer. Some of the branches failed to recover. This condition is thought to be the result of a deleterious soil condition. December, 1945, Sleeth.
- Rio Grande City Indicator Plot, 10/31/45. Live guayule branch incased by termites with soil.
- Rio Grande City Indicator Plot, 10/31/45. Nearly dead guayule plant incased with soil by termites. Sleeth.
- Extra negatives (2nd), not as good as first selected.
- Rio Grande City Indicator Plot, 10/31/45. Part of branches on live guayule plant incased with soil by termites. Sleeth.
- Rio Grande City Indicator Plot, 10/31/45. Nearly dead guayule plant badly incased by termites with soil. Sleeth.
- Rio Grande City Indicator Plot, 10/31/45. Termite soil incased branches of nearly dead guayule plant. Sleeth.
- Rio Grande City Indicator Plot, 10/31/45. Several branches of live guayule plant incased by termites with soil. Sleeth.
- 10 prints of each, 4 prints were made of these for schools, 1945, Sleeth.
- Rio 50, Exp. 1., 11/15/45. Showing large number of dying 3 yr. old guayule plants. Sleeth.
- Rio Grande City Indicator Plot, 10/31/45. Guayule branch showing scars caused by termites feeding, also parts of soil tunnels inclosing branches. Sleeth.
- Weslaco, Texas Indicator Plot, 11/13/45. Most of the plants were shallow rooted because of heavy soil and high water table. Sleeth.
- Weslaco, Texas Indicator Plot, 11/13/45. Taking soil moisture samples. Note numerous dead plants. Sleeth.
- Rio 50, 11/15/45. 3 yr. old plant from soil deseased area. Note root system. Sleeth.

- Rio 50 Exp. 1. 3 year old guayule in diseased area. Partially excavated guayule plant showing general arrangement of root system. Most of the roots were in the upper 12" of soil. The roots seen in photo, which penetrated below 24" had died back to about 20" below the surface. This plant was in a badly diseased area, many dead plants, and one which received heavy irrigation. The white lines are at 12" and 24" depths. December, 1944. Sleeth.
- Rio 50, Expl. 1. 3 year old guayule. Excavation showing roots of 3 yr. old guayule in diseased area on the Rio 50. There plants had recovered from the summer defoliation and the disease (?) was not as severe in this part as elsewhere. Not many roots penetrated below 18-20 inches and many that did were dead. The white lines are at 12" and 24" depths. Because of the angle at which the photo was taken the 12" line appears lower. December, 1945. Sleeth.
- A branch of a 3 year old guayule shrub affected with dieback caused by a deleterious soil condition. Rio 50, Exp. #1. Branch has partly recovered. Killing occurred in early summer, before August 1st. Rio 50, December, 1945. Bailey Sleeth.
- Rio Grande City Indicator Plot. Thrifty growing guayule plants at and mostly excavations pit dug by Muller. Plants some distance away, 10/15 pit are stunted. Soil moisture tests showed that the moisture content near the excavation pit was much higher than elsewhere on the plot. 10/31/45. Sleeth.
- Rio Grande City Indicator Plot. Live guayule plants on or near chuck ridge (border) which was thrown across plot to help retain moisture. Plants between chuck ridge are dead, indicating a possible moisture relationship? 10/31/45. Sleeth.
- Rio Grande City Indicator Plot. 2 or 3 yr. old live guayule plant in good to fair growing condition, partially covered with soil by termites. 10/31/45. Sleeth.
- Rio Grande City Indicator Plot. Guayule plant 2-3 yr. old and nearly dead, covered with or inclosed by termites soil tunnel. 10/31/45. Sleeth.
- Rio Grande City Indicator Plot. Branch of live guayule plant incased in soil by termites. 10/31/45. Bailey Sleeth.
- Rio Grande City Indicator Plot. Branches of guayule plant showing broken soil termite incasement and scars in branches probably made by termite feeding. 10/31/45. Sleeth.

- Weslaco, Texas Indicator Plot (so. plot.), 11/13/45. All plants were dug or pulled and plot turned back to the station. Soil examinations disclosed a heavy wet soil 2-3 ft. deep. Roots were of the shallow type. Most of the plants were killed or affected by diplodia. Sleeth.
- Weslaco, Texas Indicator Plot, 11/13/45. The plot was badly diseased with diplodia. Note dead plants. Taking soil samples. Sleeth.
- Rio 50, Exp. 1. 11/15/45. Type of root system from diseased area. Sleeth.
- Rio 50, 10/26/45. 2 yr. old shrub next to 3 yr. old shrub plot which is being kept for pathological observations. Sleeth.
- Rio Grande City Indicator Plot, 10/31/45. Incasement of nearly dead guayule plant in soil by termites. Sleeth.
- Rio 50, 10/26/45. Diplodia infected 3 yr. old plant. Sleeth.
- Rio 50, 10/26/45. 3 yr. old guayule, diplodia infected, in flat root area. Sleeth.

426987 - Guayule seed collecting machine; the mechanism mounted on the front end of a light tractor collects the seed from four rows of guayule at a time; rotating brushes knock the ripe seed off the plants onto a conveyor system which sacks the seed. Circle Ranch, Kern County, CA.

- Four-row seed harvester developed by Agric. Eng. Division.

426592 - Newly developed seed picking attachment used summer, 1943, during seed harvest. Bakersfield District, August, 1943.

421695 - Guayule seed harvest. Holding yard with seed awaiting transportation to the cleaning mill. One of the storage sheds in background. Carl A. Taylor, 6/27/42.

421078 - Closer view of crew of seed collectors. Carl A. Taylor, 6/27/42.

424574 - Guayule nursery bed seed harvester harvesting seed from first year field plantings. Bardin Field at Alisal Nursery near Salinas, CA.

424577 - Guayule nursery bed seed harvester harvesting seed from nursery beds. Alisal Nursery near Salinas, CA.

Sa45c - BPI, Salinas. Harvesting seed at Bardin Field near Salinas, CA with two row harvester. 4/8/43. McBirney Photo.

Sa44a - BPI, Salinas. Harvesting seed at Bardin Field near Salinas, CA. 7/8/43. Four row elevator type. McBirney Photo.

SA43b - BPI, Salinas. Harvesting seed at Bardin Field near Salinas, CA. Two year old plantings. Two and four row harvesters shown. 7/2/43. McBirney Photo.

Sa42b - BPI, Salinas. Harvesting seed at Bardin Field near Salinas, CA. 7/2/43. Taken by S. W. McBirney.

421695 - Guayule seed harvest. Holding yard with seed awaiting transportation to the cleaning mill. One of the storage sheds in background. Carl A. Taylor, 6/27/42.

421693 - Guayule seed harvest. Two days picking, in the holding yard awaiting transportation to the cleaning mill. Carl A. Taylor, 7/2/42.

422603 - Picking guayule seed. There is a mechanical seed picker which collects seed more economically as to cost, but which gets only about 25% of the

seed. By the handpicking method the circular tray is slid under the plant and the seed gently knocked off into the tray by hand. Chamber of Commerce, 1942.

421079 - Close-up detail showing method of collecting guayule seed by brushing the seeds into a light box. Carl A. Taylor, 6/27/42.

421080 - Close-up of man and boy collecting guayule seed. Carl A. Taylor, 6/27/42.

421082 - "The Rubber Seed Trail." Long line of sacks of seed left by collectors shown in the distance. Arguello Field. Carl A. Taylor, 6/27/42.

421081 - Guayule of Arguello Field, with sacked seed awaiting pickup, and workers in distance. Carl A. Taylor, 6/27/42.

421077 - Seed-collecting crew in Arguello Field. These workers are mostly Mexicans. Carl A. Taylor, 6/27/42.

421076 - Guayule seed-collecting crew. Carl A. Taylor, 6/27/42.

- Miscellaneous views of seed harvesting and machines taken by McBirney at Bardin Field, Salinas, CA. No duplicates ordered and none distributed to district, 7/43.

424575 - Guayule nursery bed seed harvester developed by Forest Service. Alisal Nursery near Salinas, CA.

- Experimental guayule nursery bed seed harvester harvesting seed from first year field plantings. S. W. McBirney, 11/4/42.

426986 - Analyzing guayule seed samples to check cleaning operations. Samples taken hourly from each cleaning machine. Operator is Mrs. Nellie M. Brown. Circle Ranch seed cleaning plant near Bakersfield, CA. 9/11/43, W. G. Baxter.

421696 - Results of experiment to determine whether or not the floral chaff from guayule seed is toxic to germination of the seed. Exp. No. 43. Carl A. Taylor, 7/30/42.

419975 - Close-up of greenhouse test sowings in connection with seed-treating experiments. Carl A. Taylor, 5/14/42.

419974 - Greenhouse test sowings in connection with seed-treating experiments. At the right is Carl A. Taylor, Chief Seedsman, who took photo. 5/14/42.

419910 - Seedman Carl A. Taylor inspecting germination tests conducted in green-house which is part of the nursery equipment. Alisal Nursery, near Salinas, CA. Carl A. Taylor, 3/8/42.

- Threshed and unthreshed seed. (From Sleeth's Report "Fungicidal Seed Treatments Tests on Guayule in the Greenhouse."

- Special nursery plant digger. Special digging head was mounted on a single standard killifer subsoiler frame. The blade cuts off the seedling roots at about 9-inch depth, raises the sod, and permits it to fall back into position in a loosened condition so that the seedlings can readily be pulled out of the soil.
- Salinas, CA, 1926. Digging nursery seedlings by hand prior to development of nursery digger. (LARGE PHOTO - See file for large envelope.)
- Digger for loosening guayule plants in beds before removal. Intercontinental Rubber Co.
- Close-up of digger loosening guayule plants at beginning of the bed. Intercontinental Rubber Co.
- Flats of special varieties of guayule propagated in greenhouse and picked out into flats. This type of propagation was done extensively in early days to expedite getting these special plants back into fields.
- Folder of miscellaneous photos of small Davis Nursery seeded in 1941. Seedlings harvested in 1942 by U. S. Forest Service. (Folder enclosed).
- General view of 1926 nursery at Salinas, CA. Total, 100 beds. LARGE PHOTO - See file for large envelopes.
- Salinas nursery, about 1927.
- Salinas Nursery, about 1929. Note wooden windbreak in right background which was subsequently removed when the eucalyptus trees had attained sufficient size to form an adequate windbreak.
- Guayule nursery beds, east half of nursery 3 mos. after sowing, 1929.
- Individual guayule beds 5 mos. after sowing.
- Nursery seedlings. Plants in nursery boxes in which they are handled from beds to plant-sorting shed, and in large boxes in which they are packed for transportation to field. 3/10/30.

424209 - Old type six row planting machine. Planting 6 rows of guayule plants at one operation. Jack's Ranch near Chualar, CA. W. G. Baxter, 12/8/42.

424209 - Rear view of standard 6-row Farmall-20 cultivator first used in 1929.

- Side view of one-man-operated tractor-type cultivator as used on guayule. Purportedly first one-man tractor cultivator unit used in U. S. Developed in 1928.
- Latest type of nursery row seeder, developed in 1940.
- First mechanical nursery seeder developed in 1926.
- Front view of row-type seeder developed from original nursery-bed seeder. Photographed about 1929.
- Further evolution of original nursery-bed seeder into row-type seeder. Photographed about 1929.
- Disc and ringroll used in preparation of guayule nursery beds. Intercontinental Rubber Co.
- Old type hydraulic oscillator. Used at Salinas 1926-1941.
- Evolution of original nursery-bed seeder into a row seeder. Photographed about 1928.
- Guayule nursery seeder; old style broadcasting. Used prior to 1940.
- Nursery bed subsoiler developed in 1929. Machine was used when initial preparation had so packed subsoil that subsoiling was necessary before final preparation work would begin.
- Subsoiler working in guayule nursery beds. Intercontinental Rubber Co.
- Original method of cultivating guayule in Salinas Valley. Power unit was an especially equipped Fordson tractor pulling a standard P & O cultivator. 1927.
- Original one-man-operated tractor-type cultivator, as used on guayule. Purportedly the first one-man tractor cultivator unit used in U. S. Developed in 1928.
- Standard six-row Farmall-20 cultivator. Was first used in 1929.

- Six-row guayule cultivator; front view. Intercontinental Rubber Co.
- Modern Farmall-20 cultivator with regular P & O tool bars and standards, for use on first-year plants only, 1941.
- Original windrowing machine for combining the dug plants as left by the digger, into wind rows of any desired size. This machine was later displaced by one of much heavier construction. 1931.
- Guayule baling camp in Old Mexico. 1929.
- Baling shrub at Valley Center Ranch for railroad shipment to Torreon Coahuila, Mexico. Photo taken in 1926.
- Transporting baled guayule to factory in Old Mexico, 1929.
- Baled shrub at Valley Center Ranch, February, 1926.

- Root Pruning Guayule. A-1-H seedling - all laterals removed; B-1-H seedling - no lateral roots removed except those broken in digging. top cut to 5" length. Both plants were placed in a moist chamber. (Lantern globe-covered with glass). Potted February 12, 1944. All leaves wilted in seedling with no laterals. Nearly all leaves on plant with laterals were green and new growth renewed two weeks after potting. Photo, 2/26/44, Sleeth.
- Root pruning, guayule. All lateral roots removed from plant on right. None removed in plant on left. Plants potted on February 12, 1944, and placed on greenhouse table. Seedling with no lateral roots, leaves wilted quickly and dried up. Most of the leaves on seedling with lateral roots were alive after two weeks. Photo 2/26/44, Sleeth.
- Salinity Injury. Guayule seedlings 12 weeks old, two seedlings on the left show enlargement at base of stem or root crown resulting from salt concentration in soil surface. These two seedlings grew in pots sub-watered. Soil used was from Bakersfield Nursery. Injury in center seedling is more severe than one on left. Note scarcity of lateral roots. Older leaves are dead, others turning yellow. Seedling on right grew in pot watered from top, Bakersfield Nursery soil. Photo, March 24, 1944, Schoet.
- Salinity injury. Seedlings 12 weeks old growing in potted soil from Bakersfield Nursery. Seedling on the right grew in pots watered from the top-growth appears to be normal. Seedling on the left grew in pot watered (sub watered) from the bottom. Note few laterals and swelling at root crown, or at soil surface. This swelling is believed to be caused by the concentration of alkalin salts in soil surface. Also, the older leaves show symptoms of salt injury, losing green color and turning yellow. Photo, March 24, 1944, Schoeb.
- Salinity injury. Soil from Bakersfield Nursery showing salt injury caused by sub-watering of pots. Pot on left (R) was watered from bottom for one month before sowing to guayule seed and sub-watered afterwards. Pot on left was watered from top for some length of time. Note clump of seedlings in center of sub-watered pot. Seedlings were killed around margin from accumulated salts. Photo, 3/4/44, W. A. Campbell.
- Salinity injury. Soil from Bakersfield Nursery showing salt injury caused by sub-watering pots. Pot marked R was watered from bottom for one month before sowing to guayule seed and sub-watered continuously afterwards. Pot on left was watered from top for some length of time. Note elimination of plants in sub-watered pot next to edge of pot where salts accumulated compare with pot on left. 2/1944.
- Rubber method, graphs.
- Miscellaneous.

- Plot No. C-69. Owner, J. S. Calderon, CA. Garey Test Plot, Established May 1, 1942; Photo, May 28, 1942, W. A. Campbell.
- Plot No. C-70, Owner, Craig Wilson, CA. Palmdale Plot, 1/13/44, W. A. Campbell.
- Plot No. C-70, Owner, Craig Wilson, CA. Palmdale Plot, Photographed May 14, 1942 when approximately 1 month old. Plot being irrigated. Survival between 80-90%. W. A. Campbell.
- Plot No. C-70, Owner, Craig Wilson, CA. Palmdale Plot, 1/13/44, W. A. Campbell.
- Plot No. C-71, S. C. S., CA. Little Rock Plot, 1/13/44, W. A. Campbell.
- Plot No. C-71, S. C. S., CA. Little Rock Plot, 7 weeks after planting. Little growth - weather too cold, few weeds, survival about 90%, May 15, 1942, W. A. Campbell.
- Plot No. C-71, S. C. S., CA. Little Rock Plot, CA, 8/20/42, W. A. Campbell.
- Plot No. C-71, S. C. S., CA. Little Rock Plot, 1/15/43, W. A. Campbell.
- Plot No. C-72, Owner, Hendricks Ranch, CA. Moreno plot one month after planting. Photographed May 14, 1942. Plants making good growth, weeds thick especially Russian Thistle Hoed and irrigated, May 14 to 17. W. A. Campbell.
- Plot No. C-73, Owner, E. L. Searle, CA. Banning plot, 1/13/44, W. A. Campbell.
- Plot No. C-73. Owner, E. L. Searle, CA. General view of Banning plot one month after planting, May 15, 1942, W. A. Campbell.
- Plot No. C-73, Owner, E. L. Searle, CA. Condition of plants on Banning plot one month after planting, soil very hard and dry, no weeds. May 15, 1942, W. A. Campbell.
- Plot No. C-73, Owner, E. L. Searle, CA. Close up of soil surface, Banning plot, soil very hard and dry, cultivated May 16, 1942, Photo, May 15, 1942, W. A. Campbell.

- Plot No. C-74, Owner, G. R. Barker, CA. Hemet plot, 1/13/44, W. A. Campbell.
- Plot No. C-74, Owner, G. R. Barker, CA. Hemet plot, 1/13/44, W. A. Campbell.
- Plot No. C-74, Owner, G. R. Barker, CA. Hemet testing planting, one month after planting; photo taken on May 15, 1942. Surface hard and dry. Plants have started growth but leaves still small. (Establishment) estimated at 80%. W. A. Campbell.
- Plot No. C-74, Owner, G. R. Barker, CA. Hemet test plot. Est. approximately April 15; photo, May 15, 1942. General view of plot in relation to fence, house, etc. W. A. Campbell.
- Plot No. C-68, Owner, Frank N. Silva, CA. Nysono plot. N. W. corner of planting 28" rows dryland planting plants beginning to grow in n.w. corner, but practically no growth in south and S.E. portion of field. 8/21/43, J. T. Presely.
- Plot No. C-67, Owner, Kirschenmann, CA. Cuyama Valley plot being irrigated, 8/21/43, J. T. Presely.
- Plot No. C-67, Owner, Kirschenmann, CA. Cuyama Valley Indicator Plot. Note difference in size of plants planted at same time in the spring of 1943. 11/23/43, W. A. Campbell.
- Plot No. C-67, Owner, Kirschenmann, CA. Close-up of two plants showing contrast in size between plants planted March, 1943 in Cuyama Valley. 11/23/43, W. A. Campbell.
- Plot No. C-67, Owner, Kirschenmann, CA.
- C-64 Indicator Plot, Owner, J. E. Cavanaugh, CA. Simmler. Cavanaugh property, 11/23/43. W. A. Campbell.
- Plot No. C-64, Owner, J. E. Cavanaugh, CA. Cavanaugh plot, Carrizo plains, CA. Dry land planting, 8/20/42, J. T. Presely.
- Plot No. C-63, U. S. D. A. cotton station, CA. Guayule plants 2 months old. Shafter test plot. 5/28/42, W. A. Campbell.
- Plot No. C-63, U. S. D. A. Cotton Station, CA. Shafter test plot, CA. 8/18/42, W. A. Campbell.

- 2 yr. old Bak-irrig.
- Plot No. C-63, U. S. D. A. Cotton Station, CA. Shafter plot, 1/13/44, W. A. Campbell.
- Plot No. C-63, U. S. D. A. Cotton Station, CA. Shafter plot, September, 1943.
- Plot No. C-63, U. S. D. A. Cotton Station, Shafter plot, September, 1943.
- Plot No. C-63, U. S. D. A. Cotton Station, CA. Shafter test plot, CA, 8/18/42, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga plot, six weeks after planting, 5/13/42, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga plot, close-up of plant in flower, 5/13/42, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Indicator plot, Coalinga, CA, 6/12/43, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. 3 plants, Coalinga plot, Approximately 6 weeks after planting, May 13, 1942, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga plot, 28" rows plants lapping well across rows about 3 ft. spread, 8/20/43, J. T. Presely.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga plot, established March 21 and 22, 1942. Photographed May 28, 1942, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga test plot, CA, 8/18/42, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga Indicator Plot, 6/5/43, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga test plot, CA, 8/18/42, W. A. Campbell.
- Plot No. C-60, Owner, W. W. Weeth, CA. Coalinga test plot, CA, 8/18/42, W. A. Campbell.

- Plot No. C-58, BPI Grape Station, CA. Grape Station planting at Fresno. Excellent growth, 98.4% stand, 36" rows. John T. Presely, 8/20/43.
- Plot No. C-58, BPI Grape Station, CA. 11/22/43, W. A. Campbell.
- Plot No. C-56, Owner, Gottfried Nikolai, CA. Nikolai plot, 96.4% stand. Excellent growth on dinuba soil, 8/20/43, John T. Presely.
- Plot No. C-56, Owner, Gottfried Nikolai, CA. Indicator plot between Fresno and Coalinga, 11/22/43, W. A. Campbell.
- Plot No. C-55, Owner, T. W. Ogle, CA. Ogle plot, 11/23/43, W. A. Campbell.
- Plot No. C-55, Owner, T. W. Ogle, CA. Ogle 2 acre plot, 96% survival, 8/9/43, John T. Presley.
- Plot No. C-55, Owner, T. W. Ogle, CA. Ogle plot, 11/23/43, W. A. Campbell.
- Plot No. C-54, Owner, F. A. Yearout, CA. 11/23/43, W. A. Campbell.
- Plot No. C-54, Owner, F. A. Yearout, CA. 11/23/43, W. A. Campbell.
- Plot No. C-54, Owner, F. A. Yearout, Texas. Mendota plot, est. April 1, 1942, photo May 27, 1942. Plot being irrigated. W. A. Campbell.
- Plot No. C-52, Owner, Russell Giffen, CA. Giffin plot, comparison of last years and this years planting, 8/19/43, J. T. Presely.
- Plot No. C-52, Owner, Russell Giffen, CA. 4 acre plot, Giffin Ranch near Mendota, CA, 11/21/43, W. A. Campbell.
- Plot No. C-52, Owner, Russell Giffen, CA. Dead plants in row were taken up from poor stand area and transplanted at time this years planting was done. No survival of transplants, 8/19/43, John T. Presely.
- Plot No. C-51, Owner, W. J. Hammonds, CA. Dos Palos test plot. Note cloddy nature of soil, panoche silty clay, 5/27/42, W. A. Campbell.
- Plot No. C-51, Owner, W. J. Hammonds, CA. Dos Palos test plot. Established March 24 and 25, 1942. Photographed May 27, 1942. W. A. Campbell.

- Soil moisture and root rot experiment, Block 2, Section 4, Alisal Nursery. Plots were watered by hand, using a sprinkler hose. One person operated the sprinkler, another the valve at the motor, 7/9/43, photo by Schoeb.
- Root pruning, guayule. Plants DLA-3 and DLB-2, 4 weeks after potting in greenhouse in 6 inch pots, non pasteurized roadside soil. All lateral roots were removed from plant on the left, none from plant on the right. Both plants were topped to 2 inches. Photo, 4/4/44, Schoeb.
- Post emergence drenches, Alisal Block 2, Section 3, Block 2. Showing 4 x 5 foot plots used for post-emergence damping off trials, June, 1943, photo, 7/9/43, Schoeb.
- Root pruning, guayule. Plants CLA3 and CLB1, 4 weeks after potting in greenhouse in 6 inch pots. Non-pasteurized roadside soil was used and subwatered. Plant on the left had all lateral roots removed, none were removed from plant on the right other than those lost in digging. All leaves and most of the side branches were removed before potting. Note new shoot development at base of plant on which lateral roots were left intact. Potted, 3/5/44; photo, 4/4/44, Schoeb.
- Seedlings from nonemerged seed dug up in Block 42, Alisal Nursery about 4 weeks after sowing. Seedlings in each 1/4 of flat represents emergence from seed collected from 12 inches of drill row. Photo, 8/2/43, Schoeb.
- Soil pasteurizer. CA continuous electric pasteurizer, built early, 1943 by the project. Photo, November 1943, Sleeth.
- Undercut guayule plants 4-5 months old. Plants were undercut September 10, 1944. Rows 1-2-3-4 were watered, but not undercut, no wilting. Rows 5-6-7-8 were undercut, but not watered, plants badly wilted and dying. Bryon Field, Tingey's planting. Photo, 9/22/44, Sleeth. Fig. 2.
- Undercut guayule plants 4-5 months old. Plants were undercut on September 15, 1944. Photo, September 22, 1944. Rows 1-2-3-4 were undercut and not watered. These were dying of desiccation. Rows 5-6-7-8 were undercut and watered. Plants were dying because of pink root rot-Pythium. Bryon Field, Tingey's sowing. Photo, 9/22/44, Sleeth. Fig. 1.
- Alisal Nursery, Block 2. Sample plot used for emergence and survival count. Plot 1 foot wide and 4 ft. long. Center string divides plot into two subplots, each 6" x 4', one of which was used to secure emergence and the other survival of guayule. After each counting (daily) all seedlings were removed from the emergence plot. Photo, 7/9/43, Schoeb.

- Calcium hypochlorite injury. Guayule seedlings one month after sowing. Seedlings in flat 12 were watered with a 16 parts per million of calcium hypochlorite solution, flat 140-check-watered with tap water. Treatment started with sowing of seed, April 12, 1944. Seedlings in flat 12 are stunted, chlorotic and drying up in the more severe cases. Photo, May 12, 1942, Schoeb.
- General views of greenhouse and arrangement of flats used from December 1, 1942 to May 1, 1943. Place 1022 Del Monte, Owner, Mr. Lawrence. On the whole the greenhouse facilities were poor and unsatisfactory. Minimum temperatures at night were usually quite low and the roof leaked too profusely at times.
- Graph-Seedling emergence and survival count, Santa Rita Nursery, Block 8, sown 5/29/43.
- Graph-Seedling emergence and survival count, Santa Rita Nursery, Block 42, sown 5/23/43.
- Graph-Seedling emergence and survival count, Santa Rita Nursery, Block 12, sown 5/16/43.
- Graph-Seedling emergence and survival count, Santa Rita Nursery, Block 45, sown 5/8/43.
- Graph-Seedling emergence and survival count, Santa Rita Nursery, Block 45, sown 5/8/43.
- Graph-Seedling emergence and survival count, Alisal Nursery, Block 32, sown 5/31/43.
- Graph-Seedling emergence and survival count, Alisal Nursery, Block 42, sown 5/24/43.
- Graph-Seedling emergence and survival count, Alisal Nursery, Block 70, sown 5/10/43.
- Graph-Seedling emergence and survival count, Alisal Nursery, Block 24, sown 5/1/43.
- Graph-Seedling emergence and survival count, Alisal Nursery, Block 70, sown 5/10/43.
- Graph-Seedling emergence and survival count, Alisal Nursery, Block 42, sown 5/24/43.

- Graph-Seedling emergence and survival count, Alisal Nursery, Block 32, sown 5/31/43.
- Graph-Seedling emergence and survival count, Quail Creek Nursery, Block 24, sown 5/24/43.
- Graph-Seedling emergence and survival count, Quail Creek Nursery, Block 29, sown 5/16/43.
- Graph-Seedling emergence and survival count, Quail Creek Nursery, Block 22, sown 5/1/43.
- Graph-Seedling emergence and survival count, Quail Creek Nursery, Block 29, sown 5/16/43.
- Graph-Seedling emergence and survival count, San Mateo Nursery, Blocks 33, 34, 37, 38, sown 4/27/43.
- Graph-Seedling emergence and survival count, San Mateo Nursery, Blocks 18, 20, 21, sown 4/17/43.
- Graph-Seedling emergence and survival count, San Mateo Nursery, Blocks 6, 7, 10, 40, 43, sown 6/1/43.
- Graph-Seedling emergence and survival count, San Mateo Nursery, Blocks 10, 11, 14, sown 5/1/43.
- Preliminary moisture experiment. Soil moisture contents as marked on cans. Photo taken 8/11/43 about 1 month after sowing, Schoeb.
- Photos of spray tolerance tests, September, October, 1942, put in by Lange and Sleeth. Last Division Alisal Nursery, 1942.
- Lt. H. E. Kessler Service But 31 FA.
- Effects of minimum temperatures (below 50°) on emergence, and subsequently on the September inventory by blocks, Alisal Nursery, 1943 - Graph.
- Graph-Emergence in different soils.
- Pasteurized and non-pasteurized soils, Exp. No. 48.
- Damping off control. Exp. 60, flat 70, fungus P-512. Seedlings about 3 weeks old. Seed treatment 1% by weight. December 9, 1943, Sleeth.

- May, 1943, Bakersfield, Lee Nursery. Deep holes cut in soil by water. Injured seedlings are always found in such places.
- Damping off control. Exp. 60, flat 384, fungus P-515. Seedlings about 3 weeks old. Seed treatment, 1% by weight. December 9, 1943, Sleeth.
- Damping off control. Exp. 60, flat 368, fungus P-510. Seedlings about 3 weeks old. Seed treatment 1% by weight. December 9, 1943, Sleeth.
- Damping off control. Inoculation Exp. 45. Check rows, fermate, sperggon, and thiosan. Seedlings 2 weeks old. Photo, 10/1/43, Sleeth.
- Damping off control. Exp. 60, flat 200 check. Seedlings about 3 weeks old. Seed treatment 1% by weight. December 9, 1943, Sleeth.
- Root pruning, guayule. All lateral roots removed from plant on right, none from plant on left. Plants potted February 12, 1944 and placed on greenhouse table. Seedling with no lateral roots, leaves wilted quickly and dried up. Most of the leaves on seedling with lateral roots were alive after 3 weeks. Plants were taken from Block 2, Section 4, Alisal Nursery, 2/11/44, potted next day. Photo, 3/4/44, W. A. Campbell.
- Mrs. White taking samples and examining seedlings in a root rot survey, Alisal Nursery, 7/1943. In taking 1/3 sq. ft. samples, 7 inches of a drill row one from each bed, it was found that approximately 50% of the 4-6 weeks old guayule seedlings had been affected with root rot. A number of blocks were sampled. Photo, 7/9/43, Schoeb.
- Soil moisture and root rot experiment. Block 2, Section 4, Alisal Nursery. Water meter and sand trap arrangement. Water for each plot was measured in cubic feet. 7/9/43. Photo, Schoeb.
- Guayule bagasse. Residue from milling guayule to exact rubber flowing into a settling basin near the Salinas River. December 1, 1943, Sleeth.
- Soil amendment, bagasse. Exp. 58, sown 10/26/43. Seedlings grown in pasteurized soil from Quail Creek Nursery. Flat 203 (check) 200 seed (18-593-42) covered with sand, no bagasse. Flat 170, contained 60 grams of sterilized (autoclaved) bagasse. Seedlings stunted. December 9, 1943, Sleeth.
- Soil amendment, bagasse. Exp. 58, sown 10/26/43. Guayule seedlings grown in non-pasteurized Quail Creek Nursery soil. Flat 310, 60 grams of raw (unsterilized) guayule bagasse was added to the flat. Seedlings somewhat stunted and smaller than checks. Flat 19 - check - no guayule bagasse. December 9, 1943, Sleeth.

- Soil amendment, guayule bagasse. Exp. 58, sown 10/20/43. Guayule seedlings grown in non-pasteurized soil, 6 weeks old. Flat 115 had 60 grams sterilized (autoclaved) bagasse, seedlings stunted. Flat 19, check, no bagasse. December 9, 1943.
- Root pruning, guayule. Seedlings potted February 12, 1944. All lateral roots were removed from plant on right (A-3), none from plant on left (B-3). Growth response, leaf formation, took place earlier on plant with lateral roots. After 3 weeks leaves were larger and new buds seemingly more numerous on plant with lateral roots. Photo, 3/4/44, W. A. Campbell.
- Sand splash seedlings, June, 1943.
- Root pruning, guayule. Plants 4 weeks after potting. Lateral roots were removed from the plant on the left, while several lateral roots remained on the plant on the right. Both plants were pruned to two or 3 branches. All old leaves were removed except the outside leaf on the outside branch of each plant. In case of the plant with lateral roots, the old leaf did not inhibit development of lateral buds below the leaf on the same branch. Photo, 4/4/44, Schoeb.
- 3-4 yr. old plant.
- 0-1 yr. old plant.
- 3-4 yr. old plant.
- 2-3 yr. old plant.
- 1-2 yr. old plant.
- 1-2 yr. old plant.
- 2-3 yr. old plant.
- New growth charts.
- Chart-Control pollarding experiment, 3 yr. old, 12/27/43.
- Rio 50, 11/15/45. Showing few live plants in soil diseased area. 3 yr. old plants. Sleeth.
- Damping off. Emergence-graph for greenhouse experiment 36, 1943.

- Negatives of graphs-Seedling emergence and survival count, Alisal Nursery.
- Damping off. Emergence-graph for greenhouse experiment 48, 1943.
- Watering device used in pink rot irrigation study. Devised by Bailey Sleeth, Alisal Nursery, 9/8/44, W. A. Campbell.
- Graph-Emergence in different non-pasteurized soils.
- Guayule bagasse, seed cover Exp. 64, flats 290 and 231. Seedlings about 2 month old. These two flats differ in that 290 was covered with non-sterilized bagasse 6/32 inch deep and 231 with sterilized bagasse. Soil was pasteurized. December, 1943, Sleeth.
- Guayule bagasse, seed cover. Exp. 64, flats 290 and 173. Seedlings about 1 month old. Flat 290 pasteurized soil, non sterile bagasse seed cover, 6/32 inch deep, flat 173, non pasteurized soil and sand cover. December, 1943, Sleeth.
- Guayule bagasse. Basin filled with guayule bagasse from the rubber mill. The material in this sump is from 1 to 2 years old. December 1, 1943, Sleeth.
- Sodium hypochlorite injury. Injury similar to that caused in flat 386, but less severe. Flat 251, 6 weeks old. Photo, November, 1943, Sleeth.
- Guayule bagasse, seed cover. Exp. 64, flats 245 and 173. Seedlings about 1 month old. Check flats, sand cover. Flat 245, pasteurized soil, flat 173, non pasteurized soil. Pre-emergence damping off fungi were responsible for the poor stand in flat 173. December, 1943, Sleeth.
- Guayule bagasse, seed cover, Exp. 64, flats 290 and 372. Seedlings about 1 month old. Flat 290, pasteurized soil and seed covered with 6/32 inch of non-sterilized guayule bagasse. Flat 372, non-pasteurized soil, seed covered with 6/32 inch of sterilized bagasse. Photo, December, 1943, Sleeth.
- Guayule bagasse, seed cover, Exp. 64, flats 245 and 363. Seedlings about 1 month old. Flat 245, pasteurized soil and sand cover. Flat 363, non-pasteurized soil, and non-sterilized bagasse seed cover 6/32 inches deep. December, 1943, Sleeth.
- Guayule bagasse, seed cover, Exp. 64, flats 245 and 231. Seedlings about 1 month old. Flat 245, pasteurized soil, sand cover, flat 231, pasteurized soil, covered with sterilized bagasse 6/32 inches deep. December,

- Root pruning, guayule. A-3 seedling, all laterals removed. B-3 seedling, no laterals removed. Seedling potted February 12, 1944, two weeks later both had initiated new growth. The response was more pronounced in the seedling with lateral roots. Photo, 2/26/44, Sleeth.
- Root pruning, guayule. No lateral roots were removed in seedling on the left, all lateral roots were removed from tap root of seedling on right. All leaves were removed from seedlings when potted on February 12, 1944. Photo taken February 26, two weeks after potting, shows new growth in seedling with lateral roots and none in one without such roots. Seedling from watering plots in Block 2, Alisal Nursery. Soil kept moist by sub-watering. Photo, 2/26/44, Sleeth.
- Damping off control. Exp. 60, flat 341, fungus P-509. Seedlings about 3 weeks old. Seed treatment 1% by weight. Check, spergonex, 604, and thiosan. December 9, 1943, Sleeth.
- May, 1943, Damping off plots, Bakersfield, Lee Nursery.
- Damping off. Emergence - graph for greenhouse experiment 41, 1943.
- Dodder on young guayule seedlings. Collected by Presley winter of 1942-1943 at Indio Nursery. Photo by Campbell & Presley. Negative, Presley?
- Emergence & survival in percentage of filled seed. Threshed seed experiment. Santa Rita Nursery, sown May 14 and May 28, 1943. Photo by Schoeb.
- Emergence & survival count. Threshed seed experiment, Santa Rita Nursery, sown May 28, 1943. Photo by Schoeb.
- Emergence & survival count chart. Threshed seed experiment chart. Santa Rita Nursery, May 14, 1943 sowing. Photo by Schoeb.
- Seed treater.
- Planting depth, guayule. Guayule plants from Santa Rita Nursery dug February 18; put in cold storage February 22; removed and placed in sand bunker February 28, collected and potted March 28, 1944. Seedlings planted at 3 depths, 1 inch high, 1 inch low and at original depth. Plants sub-watered. One plant was topped 1-inch high and planted at original depth. Photo, 4/4/44, Schoeb.
- Depth of planting. Exp. 97. Seedlings potted April 28, 1944, at 3 depths, at original depth, 1 inch deeper, 1 inch higher, and one seedling pruned to a 1 inch top at original depth. Seedlings in pot on the left were dug in the nursery on February 18, and held one week in cold storage and rest of time in common storage sand bunker. Seedlings in pot on the right were dug on April 24 and held in cold storage 4 days. In so far as depth

of planting effecting growth response, there was no pronounced difference, if any. The growth response was better in those seedlings dug on April 28, than those dug February 18. The difference being ascribed to storage conditions. Photo, 5/12/44, Schoeb.

- Planting depth, guayule. Guayule plants from Alisal Nursery, dug March 24, 1944, placed in cold storage; removed and potted March 28. Seedlings were planted at 3 depths, original depth, 1 inch high and 1 inch low. One plant was topped to 1 inch and planted at original depth. Photo, 4/4/44, Schoeb.
- Pythium root rot of seedling from experiment No. 31. July, 1943.
- Sodium hypochlorite injury. Check - Compare this flat to flats 190, 251, and 386. 6 weeks old. These guayule seedlings are the same age, but grown in a flat which was not disinfected with sodium hypochlorite. Photo, November, 1943, Sleeth.
- Sodium hypochlorite injury. Severe injury caused by sodium chlorate? Leaching from the flat which had been disinfected with a solution of sodium hypochlorite. Seedlings emerged normally, but 10 to 12 days after sowing cotyledons and young leaves turn light brown and die. 6 week old seedlings. Flat 386. Photo, November, 1943, Sleeth.
- Root pruning, guayule. Potted 2/12/44, photo, 3/4/44. Seedlings 3 weeks after potting, tops kept in moist chamber for 2 weeks (lantern globe covered with piece of window glass). Seedling on left, B-1-H, has resumed growth. Lateral roots on this seedling were not removed. All lateral roots were removed from tap root of plant on right. No new growth has occurred. All old leaves have died and dried up. The stem is apparently alive. Photo by W. A. Campbell.
- Root pruning, guayule. Potted 2/12/44, photo 3/4/44. Seedlings 3 weeks after potting. Leaves were removed from both plants, were not kept in a moist chamber. All lateral roots were removed from plant on right, none on left. No new growth has occurred. Lateral roots were not removed from plant on left. Note new growth and development of flower stalk and head. Photo, W. A. Campbell.
- Root pruning, guayule, Exp. 90. Plants 3 weeks after potting, kept in greenhouse. Plants were dug on 2/7/44, Santa Rita Nursery; put in cold storage 2/22, removed and placed in sand bunker at Santa Rita Nursery, removed 3/11 and potted 3/12/44. Treatment - Plants were divided into 3 groups A. with several to numerous lateral roots; B, with few to intermediate number of roots; C, few to no lateral roots. All plants were pruned to one inch tops. Difference in growth response between the 3 groups of seedlings was less pronounced than when no extra top pruning was done, other than when topped in digging. Photo, 4/4/44, Schoeb.

- Photographes of Monument (Colo.) Nursery equipment.
 - Plot No. C-74, Owner, C. R. Barker, CA. Hemet, CA, 6/12/43, W. A. Campbell.
 - Plot No. C-78, Owner, U. S. Date Gardens, CA. Indio plot, 1/13/44, W. A. Campbell.
 - Plot No. C-78, Owner, U. S. Date Gardens, CA. Indio, CA, 1/15/43, W. A. Campbell.
 - Plot No. N-5, U. S. Government, New Mexico. Las Cruces plot, Las Cruces, N. M. Light irrigation portion. Note effect of gravelly strip across planting. 5/3/43, John T. Presley.
 - Plot No. T-1, Ord Gary, Texas. Gary plot, dry land good growth, some loss probably brown rot, none recently dead. Stand about 50% less due to spring rains, 8/21/43, J. T. Presely.
 - Plot No. T-1, Owner, Ord Gary, Texas. Canutillo plot, Canutillo, Texas. General view of planting. Planted March, 1942, photo May 3, 1943. John T. Presley.
 - Plot No. T-3, Texas Agric. Exp. Station, Texas. Ysleta plot, Ysleta, Texas. General view of planting 36" rows. Planted March, 1942, photo 5/3/43. John T. Presley.
 - Morning glory spot in field planting, Tracy-Newman District.
 - Plot No. T-13, Texas Agric Exp. Station, Texas. Balmorhea plot, sub station #9. General view of planting. Planted march, 1942, some verticillium and phymatotrichum damage 2.3% total. Photo, 5/12/43, J. T. Presley.
 - Patch of morning glory near Colusa field planting.
- 419959 - Various stages from shrub to finished product. Black mat in center is raw rubber extracted from 10 1/2 lbs. of shrub. Carl A. Taylor, 4/30/42.
- J. McCallan in Spencer Field, 1/15. 42, 6 yr. old plants.
 - Negatives, Shafter, CA.

- Plot No. T-25, Pecos, Texas, Barney Hubbs, January 22, 1945, W. G. Baxter.
- Plot No. T-25, Pecos, Texas, Barney Hubbs, January 22, 1945, W. G. Baxter.
- Indicator plot T-23, Pecos, Texas, June 16, 1944, WAC.
- Plot No. T-23, Pecos, Texas, W. E. Beckman, 1/23/45, W. G. Baxter.
- Plot No. T-23, Pecos, Texas, W. E. Beckman, January 23, 1945, W. G. Baxter.
- Carrizo Springs plot, Carrizo Springs, Texas. General view of planting. Planted March, 1942, photo 5/19/43. J. T. P.
- Plot No. T-57, Carrizo Springs, Texas, January 27, 1945. W. G. Baxter.
- Plot No. T-57, Carrizo Spring, Texas, 1/27/45, W. G. Baxter.
- Weyrich plot, Eagle Pass, Texas. General view of planting. Planted March, 1942, 28" rows. Photo 5/4/43, J. T. P.
- Weyrich plot, Eagle Pass, Texas. General view of planting. Planted March, 1942, 28" rows. Photo 5/4/43. J. T. P.
- Indicator plot T-55, Eagle Pass, Texas, June 26, 1944, WAC.
- Plot No. T-53, La Pryor, Texas, Wampler, January 28, 1945, W. G. Baxter.
- Plot No. T-53, La Pryor, Texas, Wampler plot, 1/28/45, W. G. Baxter.
- Plot No. T-37, Ballinger, Texas, S. C. Routh, January 24, 1945, W. G. Baxter.
- Plot No. T-37, Ballinger, Texas, S. C. Routh, 1/24/45, W. G. Baxter.
- Plot No. T-35, Wall, Texas, Hoelscher Gin Farm, January 24, 1945, W. G. Baxter.
- Plot No. T-35, Wall, Texas, Hoelscher Gin Farm, 1/24/45, W. G. Baxter.

- Guayule indicator plot T-33, Tankersley, Texas near San Angelo, June 17, 1944, W. A. Campbell.
- Plot No. T-33, Tankersley, Texas, M. D. Bryant plot, 1/24/45, W. G. Baxter.
- Plot No. T-33, Tankersley, Texas, M. D. Bryant, January 24, 1945, W. G. Baxter.
- Plot No. T-29, Lubbock, Texas, Texas Agr. Experiment Station, January 25, 1945, W. G. Baxter.
- Plot No. T-27, Big Lake, Texas, E. P. Miller, January 24, 1945, W. G. Baxter.
- Plot No. T-27, Big Lake, Texas, E. P. Miller, 1/24/45, W. G. Baxter.
- Indicator plot T-25, Pecos, Texas, 6/16/44. W. A. Campbell.

418484 - Combine harvester; picks up shrub, chops and blows shrub into truck. Intercontinental Rubber Co. 1/26/31.

- Ft. Stockton, north plot, Webb Farm. General view of plot. Planted March, 1942, photo 5/11/43. J. T. P.
- Guayule planting Las Cruces, New Mexico. Watering experiment plots of Artschuager, June 15, 1944, W. A. Campbell.
- U. S. Cotton Field Station, Las Cruces, New Mexico. Recovery of cold injured guayule, June, 1944, photo by W. A. Campbell.
- Guayule indicator plot N-5. Las Cruces, New Mexico. June 15, 1944, W. A. Campbell.
- Las Cruces plot, Las Cruces, New Mexico. Light irrigation portion. Note effect of gravelly strip across planting. 5/3/43. J. T. P.
- Recovery of cold injured guayule, Las Cruces, N. M., June, 1944, WAC.
- Las Cruces plot, Las Cruces, N. M. Light irrigation portion. Note effect of gravelly strip across planting. 5/3/43, J. T. P.
- Indicator plot N-15, Artesia, N. M. Plants winterkilled, winter 1943 - 1944. June 16, 1944, W. A. Campbell.
- Indicator plot T-1 near El Paso, Texas. Severe winter injury, June 25, 1944, W. A. Campbell.
- Canutillo plot, Canutillo, Texas. General view of planting, planted March, 1942, photo 5/3/43, J. T. P.
- Ysleta, Texas, Texas Agric. Experiment Station, 1/20/45, W. G. Baxter.
- Indicator plot T-3, Ysleta, Texas, June 24, 1944, W. A. Campbell.
- Plot No. T-3, Ysleta, Texas, Texas Agricultural Experiment Station, January 20, 1945, W. G. Baxter.
- Ysleta plot, Ysleta, Texas. General view of planting 36" rows. Planted March, 1942, photo 5/3/43. J. T. P.
- Valentine, Texas, Espy Miller, 1/19/45, W. G. Baxter.

- Valentine, Texas, Espy Miller, January 19, 1945, W. G. Baxter.
- Deming, New Mexico, Kennedy, January 21, 1945, W. G. Baxter.
- C-3, Fig. 2.
- C-3, Fig. 3.
- Las Cruces, New Mexico, U. S. Cotton Field Station, January 20, 1945, W. G. Baxter.
- General view of planting. May 12, 1943. Plot was planted March, 1942. Photo by John T. Presley.
- Indicator plot T-21, Fort Stockton, Texas, June 17, 1944, WAC. Not used in report. Not sufficient difference in growth.
- Plot No. T-21, Ft. Stockton, Texas, Schlezel, January 23, 1945, W. G. Baxter.
- Plot No. T-21, Ft. Stockton, Texas, Schlezel plot, 1/23/45, W. G. Baxter.
- Schlezel plot, Ft. Stockton, Texas. General view of planting. Very little disease of any kind. Plot has always been on dry side. Soil drains well. Planted March, 1942, photo 5/12/43. J. T. P.
- Ft. Stockton, North plot (Webb Farm). General view of plot, planted March, 1942, photo 5/11/43, J. T. P.
- Indicator plot T-19, Fort Stockton, Texas, June 17, 1944, W. A. Campbell.
- Plot No. T-19, Ft. Stockton, Texas, Webb (Beeman). January 23, 1945, W. G. Baxter.
- Plot No. T-19, Ft. Stockton, Texas, Webb (Beeman). January 23, 1945, W. G. Baxter.
- Webb Farm east plot, Ft. Stockton, Texas. This plot was severely affected by Texas root rot in August, 1943. 16/7% mortality. Planted March, 1942, photo 5/11/43. J. T. P.
- Webb Farm, East plot, Ft. Stockton, Texas. This plot affected severely

by Texas root rot in August, 1943. 16.7% mortality. Planted March, 1942, photo 5/11/43. J. T. P.

- Plot No. T-13, Balmorhea, Texas, Texas Agricultural Experiment Station, January 23, 1945.
- Indicator plot T-13, Balmorhea, Texas, June 16, 1944, WAC.
- Damino, New Mexico, Kennedy, January 21, 1945, W. G. Baxter.

- Sodium hypochlorite injury. Injury to guayule seedlings caused by disinfecting flats with a solution of sodium hypochlorite. Injury slight, less than in flats 251 and 386. Flat 190. Photo, November, 1943, Sleeth.
- Sodium hypochlorite injury. Leaf Spot. In some of the flats in which the guayule seedlings were injured by a toxic substance leaching from the flat which had been disinfected with sodium hypochlorite a leaf spot became evident. By looking closely some spots may be seen. Photo, November, 1943, Sleeth.
- Guayule seed. 1) unthreshed seed not pretreated with sodium hypochlorite, 2) unthreshed seed pretreated with sodium hypochlorite, 3) threshed seed not pretreated with sodium hypochlorite, and 4) threshed seed pretreated with sodium hypochlorite.
- Heat injured guayule seedlings, seedling injured by excessive heat in greenhouse, photo 9.11.44.
- Temperature response, Exp. 90. Difference in growth response due to temperature. All seedlings potted on March 11, 1944. Photo taken May 12, two months later. Seedlings 1 and 3 were kept in the greenhouse and seedlings 2 and 4 were kept outside. The seedlings belong to A1 and A2 groups in experiment 90. Seedlings 1 and 2 were topped 2 and $2\frac{1}{2}$ inches high and seedlings 3 and 4 were topped one inch high. Photo 5/12/44, Schoeb.
- Graph-Effect of root pruning.
- Graph-Effects of root pruning.
- Graph-Effect of watering before digging.
- Soil moisture & root rot exp. Block 2, Section 4, Alisal Nursery. Making daily count of seedlings, July 9, 1943, photo by Schoeb.
- Seedling root rot. Branched roots resulting from early seedling root rot. Six months old seedlings from Blocks nearby to Block 47 in the Alisal Nursery. Seedlings in this area were seriously affected with root rot about the first week in June, 1943. Some beds were so badly damaged that they were resown. Many of the seedlings which recovered had branched tap roots. Photo, December, 1943.
- 3-4 yr. old plant.
- Graduations in lateral roots. Plants selected for experiment to de-

determine which of the three types recovered best after drying for 3 weeks. 3/11/44, W. A. Campbell.

- Seedling root rot. 2 weeks old greenhouse grown seedlings affected with root rot, December 10, 1943.
- Seedling root rot. 6 months old plantable guayule seedlings grown in Alisal Nursery. Seedlings with forked taproots had their taproots rotted off by a fungus when 2-4 weeks old. December 10, 1943.
- Seedling root rot. Guayule seedlings 2 weeks old grown in greenhouse, 1 healthy, one infected. December 10, 1943.
- Seedling root rot. Root rotted seedlings grown in greenhouse 2 weeks old plants, December 10, 1943.
- Root pruning, guayule. Planted 3/5/44. Plants, C3A-3 and C3B-1, 4 weeks after potting in greenhouse in 6 inch pots, non-pasteurized roadside soils are used. Both plants had numerous lateral roots when dug. All lateral roots were removed from plant on the left (C3A-3) and none from the other. Response in growth is quite evident. Plants were cut to 2-inch tops. Photo 4/4/44, Schoeb.
- Root rot, undercut plants. Bryon Field, 9/15/44, Photo 9/22/44, Sleeth.
- Seedling root rot. 2-weeks old guayule seedlings grown in greenhouse. Infected and healthy seedlings. December 10, 1943.
- Seedling root rot. Healthy 2 weeks old guayule seedlings grown in the greenhouse. December 10, 1943.
- Seedling root rot. 6-months old guayule seedlings, plantable size, Alisal Nursery. The seedling with numerous laterals is not considered desirable for planting. The other seedling is more desirable. December 10, 1943.
- Seedling root rot. 6-months old plantable guayule seedlings grown in Alisal Nursery. Seedlings with multiple roots had the taproot destroyed by root rot seedling fungi when 2-4 weeks old.
- Root pruning, guayule, Exp. 90. Plants potted 3 weeks, kept in greenhouse. Plants were dug on February 17, 1944 at Santa Rita Nursery, put in cold storage 2/22, removed and place in sand bunker 2/28, removed 3/11 and potted 3/12/44. Three treatments described. All tap roots were cut 5 inches in length. After 3 weeks little to no growth in the C plants,

moderate in B plants and very good in A plants. Photo 4/4/44, Schoeb.

- Seedling root rot. Root infected seedlings 3 weeks old, grown in greenhouse, December 10, 1943.
- Seedling root rot. 6-months old, plantable seedlings from Alisal Nursery. Tap roots were rotted off when the seedlings were 2-4 weeks old. 12/10/43.
- Seedling root rot. Guayule seedling 2-3 weeks old affected with seedling root rot. From inoculated flats in the greenhouse. Photo, January, 1945, Sleeth.
- Seed coats in guayule. Discards.

Lot 1 - Showing growth and irrigation.

Lot 2 - showing guayule growing in fields.

Lot 3 - Indicator plot slides. 1 - 19

Lot 4 - Indicator plot slides. 20 - 37.

Lot 5 - slides showing effects of moisture on growth of guayule.

Lot 6 - showing effects of topping, root pruning, hardiness of growth.

Envelope 2 - Topping charts, growth chart, survey tracings, lettersize.

Bundle 1 - Prints and negatives of guayule seedlings.

Bundle 2 - Negatives on various aspects of growing guayule.

Bundle 3 - Negatives on various aspects of growing guayule.

Envelope 1 - SI 250 soil classification charts. Physical suitability for guayule
Gila and Salt River base line and Meridian, Arizona.

Envelope 1 - SI 247 same as above.

Envelope 1 - Jacket of survey maps of Texas and Arizona and New Mexico.

Envelope 1 - SI 307 1936 General highway maps of Texas.

Envelope 1 - Photostat negatives. Soil survey, Mendate area.

Envelope 1 - Texas letter size tracings, detailed soil survey.

Envelope 1 - Soil survey, lettersize tracings, Woodland area.

25 slides - Field shots.

24 slides - Shots of equipment in use in fields.

70 slides - Experimental plots.

46 slides - Field shots.

15 slides - Shots of packing up guayule for shipment from the fields.

23 slides - Shots of fields and equipment in use.

17 slides - Shots of fields and equipment in use.

36 slides - Salinas Nursery.

13 slides - Field shots.

25 slides - shots of workers and equipment.

22 slides - field shots.

13 slides - Shots of workers and equipment.

28 slides - Diseases on guayule.

37 slides - Diseases on guayule.

20 slides - Views of California nurseries.

7 slides - Field shots of diseased plants.

10 slides - shots showing root rot.

31 slides - Views of California nurseries.

13 slides - Field shots.

56 slides - Moisture level tests. Shown are different blocks and thinned and unthinned plots.

20 slides - Shots of workers and equipment at Alisal and Coalinga nurseries, 1943.

23 slides - Field and greenhouse shots of guayule.

23 slides - Field shots.

94 slides - Field moisture experiment, Indio, Ca. 10/6/44.

18 slides - Alisal Nursery.

50 slides - Nursery fertility experiment. Block 11, Indio Ca. Plot 34. NP-3. 3/30/44.

45 slides. - Spacing tests, field moisture experiment, and range planting tests, Sonora, Texas. June 1950.

15 slides - Alisal Nursery, Sept. 1943.

37 slides - Nursery moisture experiment, minor element expt. and nursery fertility expt. at Indio, Ca. 3/7/44.

15 slides - Trays used to pick seed. 1942.

8 slides - Block 1 plot 486, PK treatment, stand level 1, moisture level 3. 6/17/44.

17 slides - Field shots.

22 slides - Views of workers and equipment.

19 slides - California field shots.

23 slides - California field shots

50 slides - Field shots.

3 rolls of movie film.

426122 - Effects of oil-spray three weeks after treatment. Bare spaces between weed growths are treated sections. Emulsion varied from 1 to 1 up to 4 to 1. Taken at Indio Nursery, Whittier Unit, CA. January, 1943.

426123 - Effects of oil-spray three weeks after treatment. Bare spaces between weed growths are treated sections. Emulsion varied from 1 to 1 up to 4 to 1. Taken at Indio Nursery, Whittier Unit, CA. January, 1943.

- Indicator plot, C-36. Caruthers, CA. 1/26/45. W. A. Campbell.

- Lettuce grown in Couley Soil containing different amounts of bagasse and nitrogen. Photos taken on April 26.

426120 - Results of oil-spray three days after treatment. Indio Nursery, Bell East Unit. Block 57, Section 7, CA. April, 1943.

410871 - Women and girls weeding nursery beds. The carts are used to relieve strain of leaning out over center of the beds. Trucks in background are those used to haul workers from nearby towns. Carl A. Taylor. 6/20/42.

424577 - Guayule nursery bed seed harvester harvesting seed from nursery beds. Alisal Nursery near Salinas, CA.

419941 - Labor camp built and maintained by Emergency Rubber Project for workers. Carl A. Taylor. 4/30/42.

419944 - Interior of one of the dining rooms at labor camp built and maintained by Project for workers. Carl A. Taylor. 4/30/42.

- Established plants. Section 5, Number 3. Treat. 2/21/44, Photo 3/7/44.

- Nikolai plot, C-56. Excellent growth on similar soil. 8/20/45.

- Established plants. Section 5, Number 3. Treat. 2/21/44, Photo 3/7/44.

- Leaf inhibitor, 1/2/44.

- Topping Experiment, fresh alisal stock, planted 4/17/43.

- 60 day storage stock.

- Fresh alisal graphs, 9/29/43.

- Stems for Auxon drop, Aug. 1944.
- Inhib., Scald 5/25/44, Photo 6/7/44.
- Pruning Wallace field, 10/5/43.
- Forked top, Aug. 1944.
- Kelley #185 lvs., 12 weeks old, July 31, 1944.
- Cuttings in water, 11/3/43.
- Field plantings, Albert Housler, Aug. 18, 1943.
- Hormone field sprouting, Paul F. Smith.
- Average number buds per plant after 44 days graph, 10/7/43.
- One leaf vs. no leaves, 23 days, Oct. 14, 1943.
- Topping and leaf removal graphs.
- Topping Experiment, 60 day storage stock planted, 4/17/43.
- Inhibition, Scalded 5/25/44, Photo 6/7/44.
- Start of Inhibition Experiment, April 1943.
- Topping, 7/13/43.
- Inhibition Experiment started Dec. 1, 1943.
- Pruning Wallace field, 10/5/43.
- Pruning Wallace field, 10/5/43.
- Pruning Wallace field, 10/5/43.

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- Topping.
- Topping. Crock, 7/13/43.
- Topping graphs, 1943.
- Inhibition, 10/14/43.
- Experiment 2. Guayule plants grow in different soil temperatures.
Photo taken June 11, 1947.

- San Antonio plot, S. A. Tex. Close spacing in foreground. Planted Apr. 1942. Photo 5/10/43. Few plants have died of root rot this year. J.T.P.
- San Antonio plot, Texas. Close spacing in foreground. Planted Apr. 1942. Photo 5/10/43. Few plants have died of root rot this year. J.T.P.
- Texas Agricultural Experiment Station, Spur, Texas. R. E. Dickson. January 25, 1945. W. G. Baxter.
- Texas Agricultural Experiment Station, Spur, Texas. R. E. Dickson. 1/25/45. W. G. Baxter.
- Dunkel. Texas Agricultural Experiment Station, Denton, Texas. January 31, 1945. W. G. Baxter.
- Dr. Lundell, Southern Methodist University, Dallas, Texas. 1/31/45. W. G. Baxter.
- Dunkel. Texas Agricultural Experiment Station, Denton, Texas. 1/31/45. W. G. Baxter.
- Dr. Lundell, Southern Methodist University, Dallas, Texas. January 31, 1945. W. G. Baxter.
- Mrs. R. L. Duke, Dalhart, Texas. January 26, 1945. W. G. Baxter.
- Mrs. R. L. Duke, Dalhart, Texas. January 26, 1945. W. G. Baxter.
- Texas Agricultural Experiment Station, Chillicothe, Texas. J. R. Quimby. January 25, 1945. W. G. Baxter.
- Texas Agricultural Experiment Station, Chillicothe, Texas. J. R. Quimby. January 25, 1945. W. G. Baxter.
- Shipping samples, Texas. January, 1945. W. G. Baxter.
- Shipping Samples, Texas. January, 1945. W. G. Baxter.
- Waco, Texas. E. A. Hicks. January 30, 1945. W. G. Baxter.
- Waco, Texas. E. A. Hicks. January 30, 1945.

- Garmon and Romines, Brownwood, Texas. January 31, 1945. W. G. Baxter.
- Garmon and Romine, Brownwood, Texas. January 31, 1945. W. G. Baxter.
- W. Lindig, Johnson City, Texas. February 1, 1945. W. G. Baxter.
- W. Lindig, Johnson City, Texas. February 1, 1945. W. G. Baxter.
- J. Lee Taylor, Briggs, Texas. February 1, 1945. W. G. Baxter.
- J. Lee Taylor, Briggs, Texas. February 1, 1945. W. G. Baxter.
- H. D. Bunch, Waxahachie, Texas. January 30, 1945. W. G. Baxter.
- H. D. Bunch plot. Waxahachie, Texas. 1/30/45. W. G. Baxter.
- Bryan, Waco, Texas. January 30, 1945. W. G. Baxter.
- Bryan plot, Waco, Texas. 1/30/45. W. G. Baxter.
- Indicator plot, T-77. San Antonio, Texas. General view of plot. MacFarland in picture. June 19, 1944. W.A.C.
- Area in San Antonio plot T-77. Used for root study by Nuller. June 19, 1944. W. A. Campbell.
- S. C. S., San Antonio, Texas. February 7, 1945. W. G. Baxter.
- S. C. S., San Antonio, Texas. February 7, 1945. W. G. Baxter.
- Hasselfield plot. Tivoli, Texas. February 7, 1945. W. G. Baxter.
- Hasselfield, Texas. Tivoli, Texas. February 7, 1945. W. G. Baxter.
- Texas Agricultural Experiment Station, Beeville, Texas. February 7, 1945. W. G. Baxter.

- Texas Agricultural Experiment Station, Beeville, Texas. February 7, 1945. W. G. Baxter.
- Texas College of Arts & Industries, Kingsville, Texas. 2/7/45. W. G. Baxter.
- N. A. Hoffman, Alice, Texas. February 6, 1945. W. G. Baxter.
- Texas College of Arts & Industries, Kingsville, Texas. February 7, 1945.
- N. A. Hoffman, Alice, Texas. 2/6/45. W. G. Baxter.
- Indicator plot T-65. Hebronville, Texas. June 20, 1944. W.A.C.
- (West) Reyna. Hebronville, Texas. February 6, 1945. W. G. Baxter.
- (West) Reyna. Hebronville, Texas. 2/6/45. W. G. Baxter.
- (East) Reyna. Hebronville, Texas. February 6, 1945.
- (East) Ramirez. Hebronville, Texas. February 6, 1945.
- (East) Ramirez plt. Hebronville, Texas. 2/6/45. W. G. Baxter.
- Clopton Plot, Rio Grande City. General view of non-irrigated portion of planting, not irrigated after July, 1942. Planted April 1942. Photo 5/5/43. J.T.P.
- Clopton Plot, Rio Grande City. General view of non-irrigated portion of planting, not irrigated after July 1942. Planted March 1942. Photo 5/5/43. J.T.P.
- Indicator plot T-61. Rio Grande City, Texas. Planted in April, 1942. Plot in full bloom and growing luxuriantly. June 23, 1944. W. A. Campbell.
- J. H. Clopton. Rio Grande City, Texas. 2/5/45. W. G. Baxter.
- J. H. Clopton. Rio Grande City, Texas. February 5, 1945. W. G. Baxter.
- Brown plot. Derby, Texas. 2/5/45. W. G. Baxter.

- Brown. Derby, Texas. February 5, 1945. W. G. Baxter.
- Texas Agricultural Experiment Station, Winter Haven, Texas. January 27, 1945.
- Texas Agricultural Experiment Station, Winter Haven, Texas. 1/27/45.
- Indicator plot T-57. Carrizo Springs. June 26, 1944. W.A.C.
- Carrizo Springs plot, Texas. General view of planting. Planted Mar., 1942. Photo 5/19/43. J.T.P.

- Vacuum dryers in guayule factory at Salinas, CA.
- Salinas guayule factory. Intercontinental Rubber Co. 1/26/31.
- Salinas factory construction, general view. Nov., 1930.
- Salinas factory construction, milling department. Nov., 1930.
- Tube mills at guayule factory in Salinas, CA.
- Special design 14-inch rubber-lined ball-mill in action. Glass door in one end developed for observing action of ball in milling operations. 1929.
- A special design 14-inch rubber-lined ball-mill. Glass door in one end, developed for observing action of ball in milling operations. 1929.

422604 - A sample of guayule rubber as it comes from the vacuum drier. It is later pressed into 100-pound slabs for shipment. Chamber of Commerce, 1942.

- First seed-picking machine, Valley Center. 1915.

418458 - Seed picker, vacuum principle, picking two rows at a time. Intercontinental Rubber Co. 8/10/41.

- One-row seed picker (See over for description).
- Two-row seed picker developed in 1941.
- Seed picking machine, blower side. Aug. 4, 1926.
- Seed picker, vacuum principle, picking two rows at a time. Developed in 1941. Intercontinental Rubber Co. 8/10/41.
- Old method of drying guayule seed in glass frames; in use 1926 - 1941.

422602 - Processing guayule seed. The drums are filled with seed and rotated in water for 20 hours or more. The bath is then drained off and replaced with a weak solution of sodium hypochlorite, in which the drum is again revolved for a period of two to four hours. The process is designed to aid germination of the seed. Chamber of Commerce, 1942.

419935 - Washroom of seedhouse where guayule seed is washed and treated. Carl A. Taylor. 4/26/42.

- Thomas A. Edison and G. H. Carnahan, president, Intercontinental Rubber Co., at a conference regarding Edison's work on the milkweed plant and guayule. 1928.
- California Legislative Committee investigating guayule rubber at Salinas, CA.

419912 - Laboratory equipment for extracting rubber from test samples of shrubs, by solvent extraction process. Carl A. Taylor. 3/8/42.

- Experimental guayule tract in Salt River Valley, Arizona. Shrub is 2 years old. March, 1945.

434141 - Scene in an experimental Australian guayule nursery. Taken from a report on the experiment dated 4/7/44.

434142 - Scene in an Australian experimental guayule plot. Taken from a report on the experiment dated 4/7/44.

418476 - Guayule field test plot. Intercontinental Rubber Co.

422894 - Comparative growth of guayule seedlings shown at different stand densities. Carl A. Taylor. 9/14/42.

419959 - Actual size photo showing difference in growth between normal seedlings and those coming from sowing of rather advanced sprouts sown under cover sand. Carl A. Taylor. 4/30/42.

- Comparison in seedlings undercut and top-pruned and those unpruned. H. L. Lobenstein.
- Comparison in seedlings undercut and top-pruned and seedlings unpruned.
- Comparison in Grade 1 and Grade 2 of Davis stock.
- Comparison in Grade 1 stock undersut and top-pruned and stock unpruned.
- Plot no. A-7. University of Arizona, Arizona.
- Plot no. A-8. Cortaro Farms, Arizona.

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- Plot no. A-10. B. P. I. Cotton Station, Arizona.
- Plot no. A-12. Maricopa Res. & Power Co., Arizona.
- Plot no. A-30. B. P. I. Cotton Station, Arizona.

- Indicator planting. General view of plot at Davis, CA. Prof. Madsen & H. W. Reynolds in picture. On Yolo silty-loam. Planted 4/25/42. Photo 7/8/42. W. A. Campbell.
- Indicator planting. General view of Davis, CA plot. 7/8/42. W. A. Campbell.
- Davis variety plot. 11/20/43. W. A. Campbell.
- Indicator plot C-13. Gnet, CA. 1/23/45. W. A. Campbell.
- Dry land planting, 2 years old, on Isom Ranch, near Newman, CA. 1/25/45. W. A. Campbell.
- Indicator plot C-15, Irrigated half. Pleasanton, CA. January 23, 1945. W. A. Campbell.
- Indicator plot C-15, dry half. Pleasanton, CA. January 23, 1945. W. A. Campbell.
- Indicator planting. Close-up of plants on Pleasanton, CA plot at S. C. S. Nursery, on fine sandy loam. Planted 3/29/42. Photo 7/8/42. W. A. Campbell.
- Indicator planting. General view of Pleasanton, CA plot at S. C. S. Nursery, on fine sandy loam. Planted 3/29/42. Photo 7/8/42. W. A. Campbell.
- Pleasanton plot. 11/18/43. W. A. Campbell.
- Aranbel plot, S. E. corner. Reynold's indicator plot, delimited in planting. 8/19/43. J.T.F.
- Indicator plot C-18. Oakdale, CA. 1/25/45. W. A. Campbell.
- General view of direct seeded. Plots seeded: June 30, left side of pipe line seeded; July 14, right side of pipe line seeded. Photo taken around August 1 - 2.
- Hormone. Water Culture. 7/13.
- Hormone. Indio Crock. 7/13.

- Indio Crock Culture. 7/23/43.

- Indicator planting. Close-up of plants on A. T. Spencer plot, Gerber, CA. On sandy loam. Planted 4/20/42. Photo 7/9/42. W. A. Campbell.

- Area in Otterson Plot in which the plants were killed by root rot. 11/18/43. W. A. Campbell.

- General of Otterson Plot showing root rot area, 1942.

- Indicator planting. General view of Otterson plot near Willows, CA. Planted 4/9/42. Photo 7/9/42. W. A. Campbell.

- Close up of plants on Otterson plot near Willows, CA. Note plant wilted from root disease. Planted 4/9/42. Photo 7/9/42. W. A. Campbell.

- Coalinga Plot. Close-up of flower. 5/13/42. W. A. Campbell.
- Coalinga Plot. 28" rows, plants lapping well across rows. About 3 ft. spread. 8/20/43. J.T.P.
- Close-up of plants on Lavere Barneson plot. Planted 4/26/42. Photo 7/8/42.
- Indicator planting. A. T. Spencer plot, Gerber, CA, on sandy loam. Planted 4/26/42. Photo 7/9/42. W. A. Campbell.
- Indicator plot, Alisal Nursery. Good contrast between irrigated and non-irrigated part. October 15, 1942. W. A. Campbell.
- Indicator plot, A. T. Spencer property near Gerber, CA, on sandy loam. Planted 4/26/42. Photo 7/9/42. W. A. Campbell.
- Spencer Plot. Dry land culture Upper Sacramento Valley. Good growth in this comparatively light, well drained soil. 11/19/43. W. A. Campbell.
- Indicator plot C-1, Gerber, CA. 1/24/45. W. A. Campbell.
- Indicator plot C-C, Gerber, CA. 1/24/45. W. A. Campbell.
- General view of Lavere Barneson plot near Gerber, CA. Planted 4/26/42. Photo 7/8/42. W. A. Campbell.
- Close-up of plants on Lavere Barneson plot at Gerber, CA. Planted 4/26/42. Photo 7/9/42. W. A. Campbell.
- General view of Lavere Barneson plot at Gerber, CA. Planted 4/26/42. Photo 7/8/42. W. A. Campbell.
- Lavere Barneson plot. General view. July, 1942. W. A. Campbell.
- Formerly Graham plot (now Frederickson plot). Little growth on Brentwood silty clay. Also, loss caused by root rot. 11/18/43. W. A. Campbell.
- Graham plot. Grasshopper injury. July, 1942. W. A. Campbell.
- Indicator planting. General view of Graham plot near Willows, CA, on silty-clay. Planted 3/28/42. Photo 7/8/42. W. A. Campbell.

- Otterson Plot. 11/20/43. W.A.C.
- Nikolai plot at Caruthers, CA. Indicator plot between Fresno and Coalinga. 11/22/43. W. A. Campbell.
- Grape Station Planting, Fresno. Excellent growth. 8/20/43. J.T.P.
- Grape Station Indicator Plot, Fresno. Very good growth. Rows 36" apart, 98% stand. Planted Spring, 1943. 11/22/43. W. A. Campbell.
- Indicator plot C-58, Fresno, CA. 1/26/45. W. A. Campbell.
- Indicator plot C-59, Sanger, CA. 1/20/45. W. A. Campbell.
- Marana Plot, Marana, Arizona. General view of planting. 5/1/43. J.T.F.
- Indicator plot A-10, Sacaton, Ariz. June 13, 1944. W.A.C.
- Seed farm, Sacaton, Ariz. General view. Planted 4/42. Photo 4/43. J.T.F.
- Litchfield plot. General view. October, 1942.
- Guayule indicator plot A-12. Litchfield, Ariz. June 13, 1944. W. A. Campbell.
- Indicator plot. Litchfield, Ariz. Spring planted half of plot, June 13, 1944. W. A. Campbell.
- Indicator plot A-15. Yuma, Arizona. June 28, 1944. W.A.C.
- Indicator plot A-20, Solomonsville, Ariz. June 26, 1944. W.A.C.
- Indicator plot A-22. Santan, Ariz. June 13, 1944. W. A. Campbell.
- Indicator plot A-22, Ashurst, Ariz. June 26, 1944. W. A. Campbell.
- Indicator plot, Santan, Arizona, A-22. Grazed guayule plant plus evidence of presence of cattle. June 14, 1944. W. A. Campbell.

- Indicator plot A-25. (Dateland). Arizona. General view. June 28, 1944. W. A. Campbell.
- Sacaton Station Plot. Planted 4/42. Photo 4/26/43. J.T.P.
- Guayule indicator plots C-72. Hendricks Ranch, CA.
- Hammond plot. 28" rows, plants meeting in rows and lapping between rows. Very little or no loss since plants became established. 8/19/43. J.T.P.
- Dos Palos Plot established March 24 and 25, 1942. Photo May 27, 1942. W. A. Campbell.
- Giffin Plot. Comparison of last year's and this year's planting. 8/17/43. J.T.P.

419911 - Laboratory equipment for continuous solvent extraction of resins from rubber in piolot plant. Chemist Harry Eoucher who designed and operates device at right. Carl A. Taylor. 3/8/42.

- Morning glory spot in field planting. Tracy-Newman District. Spot treated with carbon bisulphide. 11/20/43. W. A. Campbell.
- Patch of morning glory near Colusa field planting. 11/20/43. W. A. Campbell.
- Misc. Photos. Poor. stand. Taken 1/25/45 in Balsdon Field. W. A. Campbell.
- Two year old dry land guayule planting near Vino, CA, Sacramento Valley. January 24, 1945. W. A. Campbell.
- Indicator plot, Indio, CA. 1/15/43. W. A. Campbell.
- Indicator plot, Fairmont, CA. 12/15/44. W. A. Campbell.
- Indicator plot, Fairmont, CA. 12/12/44. W. A. Campbell.
- Indicator plot, Fairmont, CA. 12/12/44. W. A. Campbell.
- Tucson plot near Tucson, Ariz. Best portion of entire plot. 5/1/43. J.T.P.

- Yearout plot. 11/23/43. W. A. Campbell.
- Yearout plot. 11/23/43. W. A. Campbell.
- Mendota plot (Yearout). Est. April 1, 1942. Photo May 27, 1942. Plot being irrigated. W. A. Campbell.
- Excellent growth after only 2 seasons.

419904 - Rear angle view special transplanting machine developed by Intercontinental Rubber Co., taken over by government this date. Carl A. Taylor. 3/5/42.

- First method of machine transplanting of guayule. The two planter men alternated in sticking plants for planting a single row.

418471 - Six-row guayule planting machine, rear view. Intercontinental Rubber Co. 1/26/31.

419907 - Rear view of special transplanting machine developed by Am. Rubber Co. Action of covering shoes appears in center of view. Carl A. Taylor. 3/5/42.

419906 - Rear view of special transplanting machine developed by Am. Rubber Co. Large wheel is timing device governing spacing of plants in row. Carl A. Taylor. 3/5/42.

419905 - Rear view of special transplanting machine developed by Intercontinental Rubber Co. shows marking shoe, left; harrow, center; packing wheels, right. Carl A. Taylor. 3/5/42.

419903 - Close-up front, showing little harrow which breaks up tractor mark. 3/5/42. Carl A. Taylor.

419901 - Forest officers view special transplanting machine, being pulled by belt-tread tractor. Carl A. Taylor. 3/5/42.

419902 - Front quarter-view of official transplanting machine in operation. Carl A. Taylor. 3/5/42.

419900 - General view of field being planted to guayule seedlings. Carl A. Taylor. 3/5/42.

418470 - Six-row guayule planting machine, side view. Intercontinental Rubber Co. (Developed in 1930). 1/26/31.

- Tractor-drawn 4-row planting machine which opens furrow for planting, packs soil, and furrows field for following irrigation in one operation. 1927.

- Two-row planter ready for operation. 1928.

- Original 4-row planter drawn by 1916 vintage 45 Holt Caterpillar tractor. Photo at Salinas in 1927.
- Four-row planter and engine mounted on truck and trailer for transportation to distant fields. 1929.
- Original four-row check planter developed in 1929, planting in Arguello field.
- Four-row regular planter in operation. 1929.
- Side view of latest type six-row check planter developed in 1930, drawn by 30 h.p. Caterpillar tractor.
- Rear view of latest type six-row check planter developed in 1930. 1/26/31.
- Sixty inch tread Fordson-Trackson crawler-type tractor. First of this type of tractor available with minimum speed sufficiently slow for special machine planters. 1928.
- Two-row machine **transplanter** and seedlings loaded on truck for transportation to, and planting of, test plots. 1928.
- Bardin test plot. In sand hills west of Salinas, CA. Plants five months old. 1927.
- Bernardo test plot. Planted 1922. Photo June 7, 1922.
- Nursery row plants. 1921. (Over for further description).
- Test plot, Davis Station, at junction of Hy. 99 at Putah Creek. Planted in 1921. Photo January, 1922.
- Dilley test plot, Dilley, Texas. Miscellaneous planting dates. Photo September, 1937.
- Dilley test plot, Dilley, Texas. Miscellaneous planting dates. Photo June, 1931.
- Irvine field plants, Santa Ana, CA. Planted in 1927. Photo May, 1930.
- Guayule test plot, Litchfield, Ariz. Planted in 1927. Photo October 13, 1927.

- King City test plot, 5 mi. SW of King City on Jolon Rd. Planted in 1927 and photographed that year.
- Marinette test plot, Marinette, Ariz. Planted March, 1929. Photo Aug. 1929.
- Montpelier test plot No. 1, near Montpelier, CA. Planted in 1928 and photographed June, 1930.
- Test station, Morena, CA. Planted in 1927. Photo in October 1927.
- Salinas test plot. Planted in 1921. Photo in June, 1922.
- San Maria test plot, Santa Maria, CA. Plants five months old. 1927.
- Guayule plot, Shafter Station, Aug. 9, 1927.
- Shafter plot No. 1 (CA). Planted in 1927. Photo Aug. 8, 1928.
- Trustin Station test plots, Santa Ana, CA. Planted in 1930. Photo Sept. 3, 1930.
- Guayule field test plot. Intercontinental Rubber Co.
- Fifteen photos enclosed, together with a list of descriptions, giving Dr. McCallum's report on guayule production at Continental, Arizona.

418478 - Spence Field. Four year old guayule plants. Intercontinental Rubber Co. July, 1941.

418477 - Guayule field lease No. 1. Five year old plants. Intercontinental Rubber Co. 1932.

425944 - Field of guayule in the Salinas Valley, CA. Wm. D. Schoeb. July, 1943.

418472 - Guayule plants in field 3 mos. old. Intercontinental Rubber Co. 8/9/41.

- Two year old dry land plantings. Beaumont Field, So. CA District. Taken by W. A. Campbell, BAIS & AE. 12/15/44.

- Two year old guayule on dry land. Phillips Ranch, Beaumont, CA. April, 1945. Taken by Paul H. Roberts.

434145 - One year old guayule field in the San Joaquin Valley, CA. Planted in the spring of 1943.

434146 - One year old guayule field on the Forest Frick farm near Arvin, CA. Planted in the spring of 1943. 10/11/43.

- Field of guayule at Bakersfield, CA.

425946 - Field of guayule in the Salinas Valley, CA. Wm. D. Schoeb. July, 1943.

425632 - Shrub from direct seeding at Quail Creek Nursery, Salinas, CA. 5/8/43. Paul H. Roberts' photo.

423990 - A one year old guayule plantation in the Salinas Valley of CA. The plants were set out as seedlings in May.

423981 - A field of 5 year old guayule in the Salinas Valley of CA.

423980 - Guayule field in blossom. The plants are about 4 years old.

423978 - Field of mature guayule in the Salinas Valley of CA. This 600 acre field is estimated to contain about 1,200,000 pounds of rubber.

434148 - Guayule planting machine at work in the San Joaquin Valley, CA. Machine plants four rows at one time. Workers on machines are often women or

mixed crews. Machine plants 8 or 9 acres per day and feeders are required to handle plants at rate of about one per second while machine is in motion. 1944.

434150 - Guayule planting machine at work in the San Joaquin Valley, CA. Machine plants four rows at one time. Workers on machines are often women or mixed crews. Machine plants 8 or 9 acres per day and feeders are required to handle plants at rate of about one per second while machine is in motion. 1944.

434151 - Guayule planting machine at work in the San Joaquin Valley, CA. Machine plants four rows at one time. Workers on machines are often women or mixed crews. Machine plants 8 or 9 acres per day and feeders are required to handle plants at rate of about one per second while machine is in motion. 1944.

434149 - Guayule planting machine at work in the San Joaquin Valley, CA. Machine plants four rows at one time. Workers on machines are often women or mixed crews. Machine plants 8 or 9 acres per day and feeders are required to handle plants at rate of about one per second while machine is in motion. 1944.

425630 - Planting machine on the Toro-y-oso Ranch at Bakersfield, CA. 5/7/43.
Paul H. Roberts' photo.

425629 - Planting machine on the Toro-y-oso Ranch at Bakersfield, CA. 5/7/43.
Paul H. Roberts' photo.

425627 - Planting machine on Toro-y-oso Ranch at Bakersfield, CA. 5/7/43.
Paul H. Roberts' photo.

425608 - Four-row planting machine, Mexican National Laborers. Taken at Bakersfield, CA by Reed N. Haythorne, 3/29/43.

425605 - E. R. P. Four-row planting machine, showing Mexican National Laborers. Taken at Bakersfield, CA. Close-up by Ray N. Haythorne. 3/29/43.

425604 - E. R. P. Four-row planting machine, showing Mexican Nationals at work. Close-up at Bakersfield, CA. Taken by Ray N. Haythorne on 3/29/43.

425603 - E. R. P. Four-row planting machine, showing Mexican National Laborers at Bakersfield, CA. Taken by Reen N. Haythorne on 3/29/43.

425602 - E. R. P. Four-row planting machine, showing Mexican National Laborers at Bakersfield, CA. Taken by Reed N. Haythorne on 3/29/43.

424211 - Planting guayule seedlings in a field in the Salinas Valley, CA. The plants are spaced 20 inches apart in the row and the rows 28 inches apart. The 6-row planter shown is now obsolete and has been supplanted by a simpler 4-row machine. The machine at the left is a Cultipacker used to firm and smooth the surface ahead of the planting machine. W. G. Baxter. 12/8/42.

424210 - Close-up view showing the operation of the packer wheels in firming the soil about the guayule plants. Jack's Ranch near Chualar, CA. W. G. Baxter. 12/8/42.

426595 - Cultivating guayule plants with 10" lister shovels. Bakersfield District. May, 1943.

426589 - High pressure oil sprayer used in field plantings. Bakersfield District. March, 1943.

- Mechanical hoe developed to cultivate guayule. Hinged sweeps are swung in and out of the row by operator to remove weeds between plants. Salinas Valley, CA. April, 1945. Carl Taylor.

- Mechanical hoes developed by ERP, working in guayule field, Beaumont, CA. These hoes are designed to remove weeds between plants in the row. April, 1945.

- Mechanical hoes developed by ERP, working in guayule field, Beaumont, CA. These hoes are designed to remove weeds between plants in the row. April, 1945.

- Mechanical hoe developed to cultivate guayule. Hinged sweeps are swung in and out of the row by operator to remove weeds between plants. Salinas Valley, CA. April, 1945. Carl Taylor.

- Riding mechanical hoe, invented by Rod Roberts. Taken by Reg. Drew. August, 1945.

418475 - Six-row guayule cultivator; front view. Intercontinental Rubber Co.

418474 - Six-row guayule cultivator; rear view. Intercontinental Rubber Co.

- Two-row plant digger, bulldozer type, mounted on hillside type, 35 h.p., Caterpillar tractor. 1931.

418482 - Guayule harvesting digger machine by which 2 rows are dug and combined into 1 windrow. Intercontinental Rubber Co. 1/26/31.

- Combine harvester (side view) which picks up shrub, chops and blows it into truck. Inter. Rubber Co. 1/26/31.

- Combine harvester picks up shrub, chops and blows shrub into truck. Intercontinental Rubber Co. 1/26/31.

418485 - Side view of combine harvester which picks up shrub, chops and blows it into truck. Intercontinental Rubber Co. 1/26/31.

418482 - Guayule harvesting digger machine by which two rows are dug and comtined into one wind row. Intercontinental Rubber Co. 1/26/31.



419964 - Emergency Rubber Project. Interior of one of the dining rooms at labor camp built and maintained by the Project for workers. 4/30/42.

422126 - A field of guayule shrubs growing in the Salinas Valley of CA. This field was acquired from the Intercontinental Rubber Co. when the property was purchased by the government. 668 acres of such plantations were acquired. Note that the plants are heavy with blossoms and seed. More than 100,000 pounds clean weight of seed was collected from these fields during the summer of 1942. Caterpillar Tractor Co. 5/13/42.

YPM1 - Machine, planting, Old Company, 4 row.

YFM3 - Machine fertilizer, integral international.

YPM7 - Machine, planting, Holland 2 row.

YPM3 - Machine, planting, Holland.

YPM2 - Machine, planting, Old Kindorff.

YH2 - Harrow, Portugese.

YH3 - Harrow, wood bar, spike tooth.

YH5 -- Harrow, heavy steel, rigid.

YSTH1 - Harrow, spring tooth, sled power lift.

YSTH3 - Harrow, spring tooth, integral, Ford.

YL1 - Leveler, Eversman.

YL3 - Leveler, wood float, field.

YL2 - Leveler, wood float, Nursery.

YPL1 -- Lifter, plant. Nursery.

YL4 - Leveler, wood float, field with rooters.

- YL4 - Leveler, wood float, field with rollers.
- YHL1 - Loader, hay.
- YFM2 - Machine, fertilizer, integral Ford, (with cultivation knives).
- YPM5 - Machine, planting, New Kindorff.
- YH1 - Harrow, light steel, adjustable.
- YRG2 - Grader, pull, hand operated, 12' blade.
- YD12 - Disc, border, integral, Ford.
- YD11 - Disc, integral, Ford.
- YMT1 - Ditcher, martim.
- YD8 - Disc, tandem, 8'.
- YRG6 - Grader, pull, terracer, 7' - 8' blade.
- YCP11 - Cultivator, interal, Ford.
- YCP4 - Cultivator, integral case, rear.
- YCP5 - Cultivator, integral, international, front.
- Negatives of information tables.
- 419965 - Interior of one of the kitchens at labor camp built and maintained by the project for workers. 4/30/42.
- Miscellaneous prints of labor camp.
- 434124 - A section of Camp McCallum. A 1,000 man labor camp built in the Salinas Valley of CA to serve the E.R.P. Picture taken 1944.

25471 - Dr. W.B. McCallum the "father of guayule". It was Dr. McCallum who began the first scientific experiments designed to improve and domesticate guayule, some forty years ago.

- Guayule mill at Salinas showing new shrub storage section. W. Schoeb.
July 1943.

- View of Bakersfield Mill just after completion. Bakersfield, CA. May, 1945

- Pictures of Guayule (plants and plots) taken March 14. 1944.

- Water shrub ratio control. After the shrub passes through three sets of corrugated crusher rolls, it is fed into pebble mills with a definite water-to-shrub ratio by weight. The operator is shown adjusting the water to suit the shrub feed. March 1943.

- "Caterpillar" Diesel D4 tractor pulling Killefer chisel and heavy spike tooth harrow, preparing seedbed for guayule seedlings.

- Guayule planting machine in operation. It plants four rows at a time and will set out about 10,000 seedlings per hour.

- Like any other crop, guayule must be well cared for. While it grows wild in its natural range it will not compete with grass and weeds on agricultural land and make sufficiently rapid growth to justify its occupancy of such land.

YFM2 - Machine, fertilizer, integral, Ford.

YCP3 - Cultivator, integral, case front.

YHB1 - Baler, hay.

YC1 - Cart, harrow (as ever).

YC1 - Cart, harrow. (transporting harrow).

YC2 - Cart, drinking water.

YCT1 - Cart, tank, spray, auxiliary.

YCT3 - Cart, hose.

YCH1 - Chisel, heavy, solid shank.

YCH2 - Chisel, light, solid shank.

YCH4 - Chisel, integral, Ford.

YCU1 - Cultipacker, pull, brillion, 10'.

YCU4 - Cultipacker, pull, Schmeiser 10".

YCU5 - Cultipacker, Dunham, double roller.

YCP1 - Cultivator, pull, beet and bean.

YCP2 - Cultivator, integral, Ford.

YCP2 - Cultivator, integral, Ford, 2-row.

YPM1 - Machine, planting, old company.

YSPM - Machine, seed picking, integral, Ford, (McBirney-Allen).

YMB1 - Middlebuster, integral.

YMB2 - Middlebuster, pull,, sled type.

YP1 - Plow, moldboard, walking.

YP3 - Plow, mold board, 3 bottom. pul type.

YP8 - Plow, disc, 5 disc, pull type.

YP10 - Plow, moldboard, integral, 1 bottom.

YP16 --Plow, wheatland, disc.

YDP1 - Plow ditching.

YHR2 - Rake, bunch, integral Ford.

YBR1 - Rake, buck, integral.

YRR1 - Ripper road.

YRL1 - Roller, seed bed, nursery.

YR1 - Rototiller, pull type, with motor.

YR2 - Rototiller, pull type, without motor.

YR3 - Rototiller, self-propelled, garden.

YRS1 - Scraper, carryall, earth moving.

YRS3 - Scraper, revolving.

YRS8 - Scraper, land leveling, Thorp.

YRS9 - Scraper, buck.

YS1 - Sprayer, weed, field.

YPM7 - Machine, planting, Holland, 2-row.

YRS1 - Sprinkler, road.

YT3 -- Trailer, two axle, non tilt.

YT4 - Trailer, two axle, tilt bed.

YT5 - Trailer, implement, straddle bug.

YSPM1 - Machine, seed picking, pull type, Allen .

YGH1 - Hoe, grape.

YTM1 - Machine, topping, sickle blade.

YTM2 - Machine, topping, rotary blade, Kelly.

YTM2 - Machine, topping, rotary blade, Kelly.

YSPM2 - Machine, seed picking, pull type, nursery bed.

YSPM3 - Machine, seed picking, integral, McBirney.

Ymm1 - Machine, mowing, pull type.

434135 - Preparing land for the planting of guayule in the Salinas Valley of CA. 1943/.

- Two year old guayule field in the Bakersfield area oof CA. 1944.

434134 - Newly planted guayule field, Salinas, CA. 1943.

434129 - Guayule seed harvesting machine. Automatically collects seed from the plant covering from ten to fifteen acres per day. 1943.

426021 - Harvesting guayule seed in Salinas Valley, CA, with machine invented by E. E.R.P. engineers. Revolving brushes knock seed off flower stems into metal pans drawn between the rows of plants. Collection averages, 300 pounds daily and 10 acres of ground.

426592 - Seed picking attachment used with four row cultivator. Bakersfield, CA. Aug. 1943, W. Baxter.

- Section of laboratory yard at Salinas, CA. Many experiments in guayule culture are carried on here, Taken by W. Schoeb. 1944.

- Early planting pictures, spring of 1942. Made by Caterpillar Tractor Co.

- Specimen guayule plant from a two year old field near Bakersfield, CA. May, 1945.

433938 - Section of guayule genetics experiment yard at Salinas, CA. These outdoors experiments supplement those in the green houses. March 5, 1944.

- Exhibit by American Rubber producers, Inc. at State Fair, CA Sacramento. 1929.

422122 - A 4-row guayule planting machine setting out plants in a newly prepared field in the Salinas Valley of CA, in the spring of 1942. About 900 acres of seedlings were planted with machines of this type. Caterpillar Tractor Co. 5/13/42.

- Exhibit at Santa Maria, CA. Aug. 1929.

422123 - A 4- row guayule planting machine setting out plants in a newly prepared field in the Salinas Valley of CA, in the spring of 1942. Caterpillar Tractor Co. 5/13/42.

- Indicator plots on Yuma Mesa, Arizona. Plants on left are on former alfalfa land. Those to right on wild land. Note difference in growth.

- Tilt trailer (utility) capacity 15,000 pounds.

- Weed sprayer (field type).

Y33 - Sprayer, weed, integral, Cletrac.

434111 - Direct seeding guayule seed in the fields. Machine plants two rows at a time and shapes the ditches between the rows for irrigation. Salt River Valley, Arizona. 1944.

426019 - Testing soils for fertility and moisture as related to growth of guayule shrubs and rubber yeild of guayule. June. 1943.

- Miscellaneous equipment photos by Region 5 shop. No negatives.

- A section of one of the Emergency Rubber Project laboratories at Salinas Taken by W. Schoeb. 1944/

- Photos taken by Graffis of N.E.A. service. June, 1942.

- This display appeared in the Emporium window, San Francisco, CA. Latter part of February, 1942.

- A section of one of the Emergency Rubber Project laboratories at Salinas. Taken by W. Schoeb, 1944.

- Direct seeding guayule seed in field. Machine plants two rows at a time and shapes the ditches between the rows for irrigation. Salt River Valley, Arizona.

434113 - Seedlings produced from wild guayule seed in type experiments. BPI plot, Phoenix, Arizona.

422125 - Field of growing guayule planted by the Intercontinental Rubber Co. before its purchase by the government. The plants on the left are one year old, while those on the right represent an older planting. The government acquired about 668 acres of these plantations from the Intercontinental Rubber Co. Caterpillar Tractor Co. 5/13/42.

435423 - Closeup of guayule plants in one year old guayule field on DiGiorgio Fruit Corporation Ranch, Bakersfield, CA. Planted March, 1943.

- Two year old field near Bakersfield, CA.

435421 - One year old guayule field on DiGiorgio Fruit Corporation Ranch, Bakersfield, CA. Planted March, 1943.

435422 - One year old guayule field on DiGiorgio Fruit Corporation Ranch, Bakersfield, CA. Planted March 1943.

435424 - Director Roberts and Dr. McGinnies in the E.H. Mettler guayule field, Shafter Unit, Bakersfield, CA, irrigated shrub planted March, 1943.

- Engleman Garden, Edenburg, Texas. May 1943.

- Infested plant from Citcle Ranch, Wasco Unit, Bakersfield District.

- Miscellaneous photos of Salt Lake Station 9 miles West Raymondville, Texas

- Extra pictures- Topping Manuscript.

- Water factor negatives.

- Guayule variety test. Two rows on left are No. 593. Two on right variety 416. BPI Experimental Plot, Phoenix, Arizona.

- Direct seeded guayule five months after planting. Note that it is producing a good crop of seed. BPI Experimental plot near Anthony, New Mexico.

422124 - A 6-row guayule planting machine setting out plants in a newly prepared field in the Salinas Valley of CA, in the spring of 1942. About 900 acres of seedlings were planted with machines of this type during that planting season. Caterpillar Tractor Co. 5/13/42.

- Spence field, guayule shrub planted 1941. Sept. 28, 1943.

- East of Alisal nursery planted spring 1942. Sept. 28, 1943.

- Pictures of the Salt Lake Plots.

- Negative of Moisture retention.

434267 - Loading guayule bales from the filled truck onto the transport truck which will haul it directly to the factory at Salinas, CA. Each bale is the same size as a standard bale of hay (17" by 22" by 42") but weighs on the average slightly over 200 pounds. Photo 5/9/45, 5 miles northwest of Patterson, Stanislaus, CA.

434265 - Pickup type baler baling shrub after it has been dug, properly cured, and windrowed with a side deliveryrake. This baler has a pickup attachment but does not have a cross conveyer chain to feed the shrub into the baling chamber. A man with a pitch fork feeds the shrub into the baling chamber. It has been found that this hand feeding is about 40% slower than type having a cross conveyer to feed in the shrub. May 9, 1945, 5 miles northwest of Paterson, Stanislaus, CA.

- Extra large specimen of guayule collected during the wild guayule harvest in the Big Bend section of Texas in 1943. This specimen weighed 9-3/4 pounds.

433942 - Seed picker.

- In order to reduce hand work the mechanical hoe was invented. Essentially this is a set of pairs of hinged sweeps, which are swung in and out of the row between the plants. Each pairs of sweeps is operated by a man walking between the handles. It reduces hoeing costs to merely a fraction of the conventional method.

14 - Mechanical beater for cleaning dirt from roots of guayule shrub.

421695 - Guayule seed harvest. Holding yard with seed awaiting transportation to the cleaning mill. One of the storage sheds in background. C. Taylor, 6/27/42.

434114 - Guayule seedlings produced from wild guayule seed in type experiment by BPI, Phoenix, Arizona.

- Plants killed by Phymatotrichum. ERY plot near Edinburg, Teaxs.

426024 - Experimenting with sowing guayule seed directly in the field. Ordinary method is to grow plants nursery and transplant in field. Under certain conditions good stands of plants have been obtained from direct seeding. July, 1943.

434128 - Guayule seed harvesting machine developed by the E.R.P. Operated by one man and covers from ten to fifteen acres per day. 1943.

426987 - Guayule seed collecting machine; the mechanism mounted on the front end of a light tractor collects the seed from four rows of guayule at a time; rotating brushes knock the ripe seed off the plants onto a conveyor system which sacks the seed. Circle Ranch, Kern County, CA. 9/11/43.

YSPM4 - Machine seed picking, integral.

YSPM4 - Machine, seed picking, integral.

419957 - Closeup of guayule shrub in bloom. They bloom and produce seed most of the summer. C. Taylor, 4/30/42.

- Using an oil spray to kill weeds in a California guayule field. Diesel oil is emulsified with water and applied at high pressure. The spray kills or injures the weeds, but does not damage the guayule.

- Dr. W. B. McCallum, who has carried on a one-man guayule research program since 1912. He started with several hundred strains of wild guayule boiled them down to a handful of the best and most consistent producers.

418463 - Guayule nursery beds - east half of nursery 3 mos. after sowing. Intercontinental Rubber Co. 1929.

418464 - Guayule nursery beds; west half of nursery 3 mos. after sowing. Intercontinental Rubber Co. 1929.

424205 - The presprouted guayule seed is seeded in inch bands and is immediately covered with a thin covering of sand from the sand box on the seed er. Carlsbad nursery, Carlsbad, CA. W.Baxter. 11/30/42.

418467 - Digger for loosening guayule plants in beds before removal. Intercontinental Rubber Co.

418466 - Topping guayule seedlings preparatory to transplanting. Intercontinental Rubber Co. (Machine developed in 1927).

419867 - Rear view of special cultivator developed for cultivating 4" bands of soil between rows of guayule plants in the nursery beds. C. Taylor. 6/20/42.

434262 - Pickup type Case hay baler remodeled for use in baling guayule shrub after the shrub has been dug, properly dried, and windrowed with a side delivery rake. J.J. Peters farm, Kern County, 3 miles west of Shafter, CA. 5/8/45.

434264 - Pickup type baler baling guayule shrub after it has been dug, properly cured, and windrowed with a side delivery rake. Peters farm, 3 miles west of Shafter, Kern County, CA. May 8.

- Sowing a guayule nursery. The seeder drops the seed and covers them with a band of sand.

- Guayule seeder at work Machine plants full four foot bed containing seven rows at one trip. April 1943.

426022 - Guayule seeder at work; plants a four -foot bed containing seven rows at one trip. Has two hoppers, one containing seed and one containing sand, April, 1943.

435417 - Windrowing guayule shrub with a side delivery rake operated by power take-off from a Ford tractor. Shrub is cut four inches below ground line and is baled directly from these windrows. Two year old field, one mile west of Shafter, CA. 6/29/45.

419908 - Nursery crew removing undercut seedlings for transplanting to the field. C. Taylor. 3/8/42.

434264 - Pickup type Case hay baler baling guayule shrub after it has been dug, properly windrowed with a side- delivery rake and dried to the proper moisture content. Photo May 9, 1945, 5 miles northwest of Patterson, Stanislaus County, CA.

418481 - Specimen guayule plant from a cultivated field of guayule in the Salinas Valley. That plant is five years old. 8/29/42.

- 419842 - Typical guayule country in Texas - limestone ridges, rocky soils, outwash cones with guayule - although not so rough as commonly found. Plants marked with X are guayule. M. Culley. 1942.
- 433940 - Pulling and loading wild guayule shrub in the Big Bend country of Texas. The shrub is hauled into a baler where it is baled and shipped out.
- 419955 - Field of 2 year old irrigated guayule in the Salinas Valley, CA. C. Taylor. 1942.
- Comparison of the growth of five year old guayule (*Parthenium argentatum*) on left with the same aged *P. stramonium* on the right.
 - Effect of fertilizer on growth and seed production. 1952.
- 419870 - Alisal Nursery hand-weeding season. At this time over 2000 weeders were employed - a majority of them women and girls. C. Taylor. 6/20/42.
- 419877 - Women weeders at Alisal Nursery. This weeder finds the "belly buster" technique more comfortable. Taken 6/20/42 by C. Taylor.
- 419876 - Closeup of several of the Mexicans girls weeding the guayule nursery beds. Taken 6/20/42 by C. Taylor.
- 419874 - Young women employed in weeding the nursery beds. The forewoman standing at left is checking the weeders boxes to see that no guayule plants are pulled with the weeds. Taken 6/20/42 by C. Taylor.
- 418481 - Single guayule plant 5 years old. Intercontinental Rubber Co.
- 419837 - Good stand of guayule at the foot of Horshoe Mesa, Texas. Not a valley but a series of great outwash cones. Plants like the two marked with X are guayule. M. Culley. 1942.
- 419842 - Typical guayule country in Texas - limestone ridges, rocky soils, outwash cones with guayule - although not so rough as commonly found. Plants marked with X are guayule. M. Culley. 1942.
- Compatibility studies.
- 434115 - Guayule seed cleaning plant. Salinas, CA. 1944.

424406 - Guayule shrub in Arguello Field, near Salinas, CA, being fed into baler. C. Taylor. 1/14/43.

- Guayule seed cleaning plant, Salinas, CA. 1944.

- Loading guayule bales for transportation to the mill. The bales weigh about 200 pounds Taken by W. Schoeb. 1944.

424405 - Guayule shrub in Arguello Field, near Salinas, CA, being fed into baler. C. Taylor. 1/14/43.

- Beet lifter.

- New blending machine. Taken spring 1953.

- Laboratory photos, including some of blendor. Taken by M. Slattery, spring 1954.

424409 - Guayule shrub from Arguello Field, near Salinas, CA. Men piling the bales which weigh around 200 pounds each.

424404 - Guayule shrub in Arguello Field, near Salinas, CA, dug and stacked ready for baling. C. Taylor. 1/14/43.

424595 - Bales of guayule as they come from the baler. The bales weigh about 250 pounds. Salinas Valley of CA. W. Schoeb, Salinas copy, 1/15/43.

- Baling gauyule shrub in the Salinas Valley, CA. The shrub is plowed cut, windrowed with a side delivery rake, then baled with this pickup baler. The bales weigh about 200 pounds. Taken by W. Schoeb. 1944.

424594 - Baling gauyule shrub for transportation to the factory in the Salinas Valley of CA. The shrub is delivered to the baler by a buckrake propelled by a Caterpillar tractor. W. Schoeb. Salinas copy. 1/15/43.

- Baling guayule shrub in the Salinas Valley, CA. The shrub is plowed cut, windrowed with a side delivery rake, then baled with this pickup baler. The bales weigh about 200 pounds. Taken by W. Schoeb. 1944.

424596 - Buckraking guayule shrub from the field to the baler. Salinas Valley, CA. W. Schoeb, Salinas copy. 1/15/43.

424408 - Guayule shurb in Arguello Field, near Salinas, CA. Piles baled shrub awaiting transport to rubber extractory. C. Taylor. 1/14/43.

419875 - Young matrons weeding guayule nursery beds. Some of them employ gardeners to care for their lawns while they tend guayule as a patriotic duty. Taken 6/20/42. C. Taylor.

419873 - Some of the Mexicans girls employed in weeding the nursery beds, The Mexican workers are particularly adept at this and other nursery work. Taken by C. Taylor. 6/20/42.

419872 - Girl weeders at the Alisal Nursery. The two in the foreground are deaf mutes who found that the occupation definitely hampers "manual conversation." Taken by C. Taylor. 6/20/42.

425459 - Guayule nursery in the Salinas Valley, Ca. The plants are seedlings ready for digging.

434126 - An oil spray rig devised for controlling weeds in guayule plantations. Oil is emulsified with water and applied under pressure. Kills weeds but does not damage the guayule. 1944.

434130 - Showing methods used in packing guayule seedlings for shipment to the field, Salinas, CA nursery. 1943.

426586 - Four row cultivator, lister shaped shovels make shallow ditches between each two rows to facilitate irrigation, Wasco Unit, near Bakersfield, CA. W. Baxter, 8/43.

422127 - The original 20 acre nursery of the Intercontinental Rubber Co., purchased by the Government. These one year old seedlings were dug in the spring of 1942 and planted in about 900 acres of plantations in the Salinas Valley of CA. The over head pipes are used to irrigate the beds, which require frequent watering, especially when the plants are small. Caterpillar Tractor Co. 5/13/42.

- Guayule seed harvesting machine developed by the Intercontinental Rubber Co. several years ago. It utilized the suction principle to separate the ripe seed from the plant. This type of machine is no longer used. W. Schoeb. 1944.

- New guayule plants regenerated from root sections.

- Comparison of effects of boron on guayule.

- Greenhouse flats are used to study the reaction of seedlings to fungi suspected of causing disease.

- Control of weeds by oil sprays.
- Nursery stock plants grown with nutrient solution as the only source of nutrient supply.
- Hormone treatment of the root of transplanted stock gives the plant a boost in re-establishing itself.
- The general response to topping nursery stock is shown.
- These two plants were grown from stem clippings. The roots were induced by hormone treatment.
- View of four banks of extraction flasks, Chemical Laboratory.
- Pictures show the relative size and type of growth obtained from the 5 differential moisture treatments.
- Cotton stalk rake.
- Cultivator, Case.
- Cultivator mounted Case.
- Cultivator mounted Farmall.
- Cultivator mounted Ferguson - Fordson.
- Wood float.
- Guayule harvester.
- Portable oil storage stand.
- Oil supply rig.
- Holland 4-row guayule planter.
- New Kindoff planter.

- Old Kindoff (Allen) 4-row guayule planter.

- Guayule seed picker.

- Allen 4-row guayule seed picker.

- "Straddle bug".

- Tilt Trailer (Frauehauf).

435419 - Closeup of baler used in baling guayule shrub. A special pickup attachment takes the shrub directly out of the windrow. Bales are same size as hay bales, but twice as heavy. Two year old field 3 miles west of Vernalis, CA.

424599 - Laborers piling guayule shrub after digging. The shrub is allowed to cure 3 or 4 days in the field before baling. Salinas Valley, CA. W. Schoeb, Salinas copy. 1/15/43.

424407 - Guayule shrub in Arguello Field, near Salinas, CA. Buckrake used to deliver nearby shrub to baler. C. Taylor. 1/14/43.

424598 - Laborers piling guayule shrub after digging. The shrub is allowed to cure 3 or 4 days in the field before baling. Salinas Valley, CA. W. Schoeb. 1/14/43.

435420 - Baling guayule shrub with a specially designed heavy pickup attachments on a hay baler. Attachment was built in the Forest Service shops. The shrub is cut 4 inches below the ground line and windrowed with a side delivery rake. Two year old field 3 miles west of Vernalis, CA.

- Baling guayule shrub in the Salinas Valley, CA. The shrub is plowed out windrowed with a side delivery rake, then baled with this baler. The bales weigh about 200 pounds. W. Schoeb. 1944.

430240 - Spot spraying morning glories with diesel oil. The oil kills the morning glories but does not injure the guayule plants. Dry land farming near Beaumont, CA. 6/14/44.

426589 - High pressure oil sprayer used in field plantings. Bakersfield, CA. 3/43. W. Baxter.

426596 - High pressure oil-spray rig in use on guayule plants near Salinas. CA. March 1943. W. Baxter.

- Field experiments with guayule. General view of hundreds of promising selections being held for observation.
- Field experiments with guayule. Dr. H. E. Benedict, making observations on an experiment involving effect of flowering on rubber formation.
- Micrografting guayule. General view of operations, Carl A. Taylor.
- Micrografting. Manner of cutting the scion. Knife is made from sliver of safety razor blade. (Actual size, approx.).
- Reciprocal grafts of guayule and mariola. Newly completed graft, showing general technique. 5/20/48.
- "Three Story" graft - Guayule on mariola on guayule. 1/16/48.
- Reciprocal grafts of guayule, (*Parthenium argentatum*) and Mariola, (*Parthenium incanum*).
- Grafting. Guayule on mariola at 3 1/2 months. Mariola on guayule.
- Interspecific grafts of *Parthenium*. Guayule on *Stramonium*, ungrafted stramonium, guayule on mariola, and mariola on guayule.
- Grafting, selective injury by Vapotone spray. Hybrid mariola on guayule (severe), hybrid mariola & guayule shoot (none), guayule on guayule (none), and true mariola on guayule (none).
- Micrografting stramonium on guayule (*P. stramonium*): (*P. argentatum*). Newly made graft and young graft (3/4 actual size).
- Grafting guayule and *P. stramonium*. Parent plant of *Parthenium stramonium* and guayule on stramonium, *P. stramonium*.
- Micrografting of *Parthenium stramonium* on guayule, (*Parthenium argentatum*).
- Micrografting. *Parthenium stramonium* with guayule (*P. argentatum*). *P. stramonium* (graft) on guayule - note comparative growth (control). Guayule on *P. stramonium* (graft) - note comparative growth (control).
- Micrografting guayule & *P. stramonium*. Stramonium on guayule at 2 mos. Ungrafted stramonium control.

- Guayule grafted on P. stramonium. Field planting of micrografts. Grafted 5-7. Photographed 11/19/47. Left to right: 2 grafts then 2 controls.
- Parthenium stramonium on Guayule. Field planting from micrografts. Grafted 5-7. Photographed 11/19/47. Left to right: 2 grafts then 2 controls.
- Micrografts of Guayule and P. stramonium. Ungrafted Guayule and Guayule on Stramonium. Ungrafted Stramonium and Stramonium on Guayule. Shown at about 9 months after grafting.
- Tangential section of micrograft of P. Stramonium on Guayule. 9 months old. Enl. 3x. (The stramonium wood is the lighter colored). 1/18/48.
- Micrografting sunflower on guayule. 2 weeks old and 4 weeks old. 4/19/47.
- Micrografting sunflower on guayule 4265. Union of scion and understock at about 2 months. (Actual size).
- Guayule 4265 on sungold sunflower. 4/22 to 8/12/47.
- Micrografting sunflower with guayule. Grafts about ten weeks old; (Left to right) Four grafts of "Sungold" Sunflower on Guayule 4265, showing different rates of growth and vigor; one graft of Guayule 4265 on "Sungold" Sunflower.
- At right: Guayule 4265 micrografting on Sunflower, in comparison with ungrafted Guayule (left) of approximately some age and culture. Ungrafted guayule was seeded 10/24/47 and transferred to water culture 12/24. Guayule 4265, seeded 10/16/47 was micrografted on to Sungold sunflower 11/23, and transferred to water culture 12/7/47. Complete nutrients used on both classes. Photographed 2/11/48. (3 1/2 months from seeding).
- Harvested grafts of sunflower on guayule, 10/27/47. (Grafted 7/2/47).
- Graft of sunflower on guayule at age approximately 4 months. (2nd series, 10/18/47).
- Reciprocal grafts of guayule and sunflower. Showing unilateral compatibility; and growth at 20 weeks, extending into the fall and early winter. (Micrografted 6/26; photographed 11/18/47 at 20 weeks). Left: Guayule 4265 on sungold sunflower; Center: ungrafted guayule; Right: sunflower on guayule.

- Micrografting guayule and Jerusalem artichoke. Guayule grafted on single eye and on whole tuber respectively. Note the leaf-curl of scion on whole tuber.
- Micrografting guayule on Jerusalem artichoke. Graft on single eye of Jerusalem artichoke, and grafts on whole tuber of Jerusalem artichoke (Note curling leaves).
- Micrografting of several desert composites on guayule.
- Micrografting of Chinese elm (*Ulmus pumila*) on guayule, (*Parthenium argentatum*). Newly made graft.
- Micrografting of guayule on Russian dandelion (*Vrim Saghyz*).
- Greenhouse culture of guayule. Propagation of 276 strains selected from native Guayule.
- Greenhouse culture of guayule. Constant temperature tanks for determining effects of soil temperature on growth and rubber formation. Seedlings grown under controlled conditions for experimental use.
- Typical rooting of guayule cuttings - roots emerging from between bark and xylem. 2/11/48.
- Abnormal shoot growths of some guayule cuttings. Top row: untreated cuttings. Bottom: treated with Indole butyric acid 100 p.p.m. 20 hrs. Photo at 2 1/4 mos. 3/5/48.
- Influence of soil quantity on growth of guayule in the greenhouse. Seeded into containers of 1 gallon and 4 oz. capacities respectively on 10/1/47 and photographed 1/16/48.
- Seasonal growth effect. Profuse initiation of axillary shoots on plants which made single stems and did not flower in the mid-winter months. 3/16/48.
- Greenhouse experiments. Guayule seedlings a month after sowing.
- Effect of plant band on growth of young guayule. Veneer bands, soil controls, soil beside asphalt and asphalt felt bands, and soil containing asphalt felt.

- Greenhouse experiments. Effects of light, temperature, and nitrogen. Dr. H. E. Benedict. Table of gravel and nutrient cultures.
- Rubber analysis. Quantitative determination by turbidimetric method.
- Rubber analysis. Molecular weight determinations.
- Greenhouse experiments. Strain 4265 in test of effect of season and age of plant on rubber yield.
- Rubber analysis. General view of laboratory where molecular weights of rubber are determined. Dr. Brooks in charge.
- Rubber analysis. Special equipment permits processing of small samples for tests.

- Breeding Nursery, 1949. A view of part of the guayule breeding nursery at the U. S. Natural Rubber Research Station. First generation hybrids between 36-chromosome guayule and P. stramonium are in the foreground while guayule and various other hybrids are shown in the background. The greater vigor of the hybrids can be readily seen. Photographed September, 1949, Salinas, California. Bags indicate cross pollinations for the production of additional hybrids and selections.

- Harvesting and baling guayule shrub on the 02 Ranch, Big Bend, Texas. 1943. Fig. 2 in the report of the guayule seed stock baling and its possible use. April, 1953.

- Clipping (Pollarding). Clipping guayule, Spence Field, May, 1952.

- Grafts (intergeneric). Guayule on sunflower at 11 weeks; typical graft of guayule 593 on sunflower at 11 weeks (note guayule foliage emerging from sunflower stock); guayule 4265 on sunflower at 5 weeks; and month old graft of sunflower on guayule.

- Outstanding selections or hybrids. "Increasing Natural Rubber Yield by Breeding." Comparison photo of yield of guayule and hybrid guayule. February, 1952.

- Planting. Transplanting nursery stock with Holland Planter, 1951 (3 views). One shows good view of transplant. Also, Lindeman Planter in operation. The rubber planting wheel (on the Lindeman Transplanter) is well adaptable to a very wide range of plant sizes. Buneebly report - stachpibug. May 19 to June 1, 1951.

- Seed harvesting. 1) View of 1944 guayule planting before using overlapping cultivator. The plot had been previously weeded with regular cultivator, leaving most of the weeds in the rows. Spence Field, May 14, 1952. 2) View of 1944 planting of guayule immediately after weeding with overlapping cultivator. Spence Field, May 14, 1952. 3) Suction seed harvester, side view, Conley Field, 9/3/52. 4) Suction harvester in operation, Spence Field, August, 1953. Guayule nursery treated with IPC. Center - Untreated. On right - Grass was checked by applying from 10 to 30 pounds IPC per acre. Applications were made February 24, 1951. (See detailed annual report, April 1951). IPC = Isopropyl-N-phenylcarbaminate. 6) Suction harvester in operation, Spence Field, Salinas, CA, August, 1953. 7) Loading guayule seed, Conley Field, September 3, 1952.

- A field of guayule, 2 general views.

- Close-ups of individual plants (guayule). One of these shows branching habit and mature seeds (5 years old). One shows large plant in native habitat (see native stands).

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- Map showing locations of areas suitable for guayule production.
- Oil Sprayer, Cletrac. Also in operation, 1951.

418480 - Arguello Field, 10 year old guayule plants. Intercontinental Rubber Co. 8/9/41.

418472 - Guayule plants in field 3 months old. Intercontinental Rubber Co. 8/9/41.

425944 - Field of guayule in the Spence Field, Salinas Valley, CA. Wm. D. Schoeb, July, 1943.

418479 - Irvine Field, 4 year old guayule plants. Intercontinental Rubber Co. 1936.

- Old Spence field, on south side of old Stage Coach Rd., midway between Hy. 101 and Alisal Rd. Planted in 1927. Photo, 1931.

- Jack's Field, planted in 1929 and photographed in 1932. Portion of a 750 acre field of guayule. East side of Hy. 101 -- first field immediately north of Chular.

- Spence Field on south side of old Stage Coach Rd., midway between Hy. 101 and Alisal Rd. Special varieties, planted in 1927. This part of field was irrigated. Photo, 1928.

425946 - Field of guayule in Spence Field, in the Salinas Valley, CA. Wm. D. Schoeb, July, 1943.

- Guayule (left). Guayule-stramonium hybrid S2027-139 (right). October 6, 1952.

- F1 hybrids - background; guayule, foreground; Spence Field Nursery, Block 4, Photographed 11/19/52.

- Guayule-stramonium hybrid (center) S2245-6. October 8, 1952.

- Guayule-stramonium hybrid S2012-238 (left background). Guayule (right background). October 6, 1952.

- Guayule-stramonium hybrid S2011-173 (left background). Guayule (right background). October 6, 1952.

- Guayule (left background). Guayule-stramonium hybrid S2032-164 (right background). October 6, 1952.

- Indicator Plot T-21. Fort Stockton, Texas. 6/17/44. W. A. C.

- "Caterpillar" track-type Tractor pulling chisel and spike tooth harrow.

preparing seedbed for guayule seedlings. Guayule is one of several plants under study to determine a source of rubber. Project under supervision of the U. S. Forest Service, Salinas, CA. G. Scovill, 5/13/42.

418472 - Guayule plants in field 3 mos. old. Intercontinental Rubber Co. 8/9/41.

- Guayule planting in Spence Field. L to R: S. tomentosum and S. tauraghyz plants.
- Fire damage to laboratory equipment in fire of March 18, 1953. (200 Bldg.)

- Glasshouse. Salinas, CA. December 29, 1952 to February 11, 1953.
- Guayule (P. argentatum) found on the O2 Ranch in the Big Bend area of Texas. These are relatively old shrub, but have been browsed by sheep. The woody stems have been eaten back to within a few inches of the ground. April, 1953. Figure 1 in the Report of the Guayule Seed Stockpile and its Possible Use.
- Big Bend area, Texas. 1953. Newly-established mariola growing along the road from the Big Bend National Park toward Alpine, Texas. April, 1953.
- Grinding guayule shrub and weighing ground material. Spring, 1953.
- Greenhouse early testing, October 6, 1952 and May, 1953.
- Misc. photos and negatives, 1953.
- Guayule planting, general view, Conley Field, May 14, 1952.
- Plant breeding nursery, U. S. Natural Rubber Research Station, Salinas, CA. Center row contains variety 593, guayule. On both sides are new hybrids which, by actual weight, are over twice as large as 593. September, 1952.
- Charts and tables, guayule, November 1952. (Also transparencies).
- Guayule nursery, Field L, Southwestern Irrigation Field Station, P.O. Box 1339, Brawley, CA. Photo by B. A. Krantz, January 30, 1953. Stand planted November, 1951.
- Threshing and cleaning guayule seed, Marchm 1953.
- The southeast area of the Big Bend. Taken from the road toward Hot Springs looking back toward the Chisos Mountains. This area appeared to have too poor soil for good growth of guayule. 1953. Figure 9 of the Report of the Guayule Seed Stockpile and its Possible Use.
- Big Bend National Park, 1953. Photographed from near Headquarters Building, looking northward, with Little Christmas Mountains to the left and Paint Gap Hills at the right. The relatively level area in the middle distance of this picture represents sections upon which experimental guayule plantings may be made if Park authorities approve. The elevation of this area is

between 2,500 and 3,500 feet. Figure 8 of the Report of the Guayule Seed Stockpile and its Possible Use.

- Big Bend National Park, 1953. Photographed from near Headquarters Buildings, looking southward toward Casa Grande Mountain (See Map. Figure 6). Figure 7, in the Report of the Guayule Seed Stockpile and its Possible Use.
- Surveying for guayule shrub, O2 Ranch, Big Bend area, Texas, 1953. Mt. Santiago in background. Mr. Woodward, manager of the O2 Ranch, is holding the largest guayule found in several days of hunting. This picture was taken very near where Figure 3 was taken 10 years earlier. Note the difference in the vegetative cover. Figures 2 and 4 were also taken in the same vicinity. Figure 5 in the Report of the Guayule Seed Stockpile and its Possible Use.
- Looking for guayule shrub, O2 Ranch, Big Bend area, Texas, 1953. Mt. Santiago in background. The three most common plants are creosote bush, yucca, and lechuguilla (curved leaves). Figure 4 in the Report of the Guayule Seed Stockpile and its Possible Use.
- Harvesting guayule shrub on the O2 Ranch, Big Bend area, Texas, 1943. A faint outline of Mt. Santiago can be seen to the left of the horse. Figure 3 in the Report of the Guayule Seed Stockpile and its Possible Use.
- Nursery planting, Spence Field, May 14, 1952.
- Guayule, U. S. D. A. Grunhonse, 7/15/52. Hair - mite damage.
- Additional photographs of suction harvester.
- Close-up of overlapping cultivator, showing sweep shovels. Spence Field, May 14, 1952.
- Slightly side view of overlapping cultivator. If directly behind, it could be seen that the sweep shovels slightly overlap. The 1944 guayule planting is seen beyond weeder just prior to seeding. Photo taken May 14, 1952. Spence Field.
- Suction seed harvester, Conley Field, September 3, 1952.
- Weeding, Spence Field. Views of weeder and of guayule planting before and after weeding. May 14, 1952.
- Ferguson Pencil Weeder, July, 1951, Spence Field.

- Old blending machine. Photographed approximately Spring, 1952.
- Spence Field clipping experiment, March, 1953.
- Grafted guayule on mariola. Apparent migration of scion bark tissue into understock. 7/1/48.
- Graft of guayule on guayule, showing peculiar abortion of flowering, and subsequent formation of straplike leaves. 1. One of the original type leaves, 2. Bulbous growths in lieu of peduncle and flowers, 3. Distorted peduncle and aborted flowering.
- Guayule with inset scion of Mariola. (Note reverse taper of scion). Fig. 3.
- Mariola with inset scion of guayule. Fig. 4.
- Ungrafted Mariola.
- Ungrafted guayule.
- Materials used in exp. "Sanitation of cuttings in rooting media." Left, two seedlings of size range used for cuttings; right, six typical cuttings as to size and pruning. 12/4/48.
- Mechanical hoes on Ford, set to hoe 4 rows of guayule spaced 28" apart. Patterson Shop, 5/9/45.
- Root-knot nematode, Old Alisal Nursery Block 2, August 15, 1942.
- Sand dominant mixtures, 8 weeks old, 6/7/47.
- Loam dominant mixtures, 8 weeks old, 6/7/47.
- Month old graft of sunflower on guayule.
- Method of packing guayule plants in vermiculite, March, 1953.
- Seedthresher, old and new types. Photographed 9/4/52, Salinas, CA.
- Goldenrod plots photographed 9/19/48. View #1 - (left to right) Strains

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6-S30; 44-S-100; 3-S-50. View #2 - (left to right) Strains 44-S-28;
3-S-91. View #3 - (left to right) Strains S. Semp. hand.; S. alt. Sav.
Riv. View #4 - (right to left) Strains Hyb. 6-S-35; 3-S-79. View #5 -
Strains 6-S-30; 44-S-69.

18481 - Single guayule plant 5 years old. Intercontinental Rubber Company.

- Variety 593, guayule. 49c8 Abnormal prophase (early) $90X \times 10X = 900X$.
- 49129 Metaphase I. C49181-5.
- Stramonium - Diakinesis. 900X.
- 49J3 Diakinesis. C49160-3.
- 49h26 Diakinesis. Plant 45-32-2. (4255 x P. stramonium).
- 49h26 Diakinesis. Plant 45-32-2. (4255 x P. stramonium).
- 49h31 Diakinesis. Variety 593, guayule.
- 49c7 Tapetal metaphase w/satellites. $90X \times 10X = 900X$. 48-70-9 guayule.
- 49c7 Tapetal methaphase w/satellites. 48-70-9 guayule. $90X \times 15X = 1350X$.
- 49h19 Diakinesis. 49160-3 (47-92-12 x P. stramonium).
- Variety 593, normal diakinesis. 900X. Photo, 9/48.
- Tapetal prophase, 47.93-18.
- The chromosomes of four species of Seorzonera; Karyogram of S. tau-saghyz, root tips of S. hispanica, S. eriophora and S. tomentosa, and second meiotic anaphase of S. tomentosa (Camera Lucide drawings).
- Guayule Variety 444, slide b26-1. Diakinesis enlarges from 900X negative.
1 VI 2 IV 29II 1I + 1B chromosome, 73 + 1 chromosome.
- Guayule Plant D108-10. Project nursery Row P 17 Plant 11. Diakinesis - One hexavalent, 7 tetravalents, 3 trivalents, 17 bivalents, 14 univalents plus 2 single B-chromosomes. 1800 X magnification.
- Guayule Plant 45-32-2. Diakinesis - 18 II + (1 II 2 I B-chromosomes). 900 X negative. Print enlarged to 1800 X. Photographed October 25, 1949.

- Leaves of kirm-saghyz. To the left of each clone number are representative leaves taken in the field; those to the right were taken from greenhouse cuttings of the same clones. Note: This envelope also contains other negative showing the same leaves on a smaller picture size (9cm x 12cm).

- See smaller similar photo, 12/49.
- Guayule at Beeville, Texas, Station. About 6 years old. Photographed, December, 1948.
- Mesquite and cactus, Texas rangelands.
- Mr. Hall, superintendent of Beeville, Texas, station, looking at guayule planted in 1943. Photographed, December, 1948.
- Dr. F. A. Frank in guayule nursery at Winter Haven, Texas.
- SP-14 diakinesis. 18 bivalents with at least 4 circle bivalents (2 chiasmata).
- 47-93-18 tapetal cell prophase. 37 chromosomes with 3 satellited chromosomes. Photographed, 8/48.
- Plant 47-93-12. Prob. endomitolic prophase. Photo, 8/48.
- GG, SS, GS, GGS, and Gss trichomes.
- Hybrids, 90 chromosomes, 2nd generation.
- BPI & Basic Group, Salinas, CA, 1949; Guayule employees, May, 1954; BPI group picture, August 5, 1953.
- Planting of hybrid guayule at Winter Haven, Texas. Planted October, 1949.
- Haploids 49254-130 and 49254-131 in Spence Field. From left to right in the second row are two normal 4265-X plants ($72+2$ chromosomes), the two haploids, one aberrant plant (over 72 chromosomes), and one normal plant. 49254-130 has $37+1$ chromosomes and produces an unusually high percentage of good pollen for a haploid (65%). Photographed September, 1949. USDA Natural Rubber Research Station, Salinas, CA.

- The first row on the left is guayule, Variety 593. The third row, which extends back to the middle of the screen, is the second generation of a 90-chromosome hybrid between 72-chromosome guayule and P. stramonium. Note the uniformity and vigor of the nine hybrid plants shown. Planted April, 1949. Photographed September, 1949, U. S. Natural Rubber Research Station, Salinas, CA.
- General view of part of the guayule breeding nursery at the U. S. Natural Rubber Research Station, Salinas, CA. One year's growth of P. stramonium is shown in the foreground while F₁ hybrids are shown in the background. Guayule plants selected for high rubber content to be used in the selection and hybridization program are in the center of the nursery. Several thousand controlled crosses were made in 1949 as shown by the parchment bags used to prevent contamination. Photographed September, 1949, Salinas, CA.
- The staked row on the left is guayule, Variety 4265-I, while that on the right is a hybrid between high chromosome guayule and P. stramonium. This hybrid is in the second generation, but note the uniformity of the plants. The greater vigor of the hybrid can also be seen. This is a good example of apomictic reproduction of F₁ hybrids. Evidence indicates that this type of hybrid will continue to breed true. These plants were planted in April, 1949. Photographed, September, 1949. U. S. Natural Rubber Research Station, Salinas, CA. The 4265-I row is project nursery Row P-24 - west end. The middle row is P-23 and the plants are Culture D-145. The third row to the right is P-22 with Culture D-136.
- 49122 Verticillium susc. Center row: Diploid 4254; Left row: Triploid 4263; Right row: Tetraploid 407; (Variety test, 1948). W. M. Plants in Spence Field, Photographed in September, 1949.
- Planting guayule on Camp Pendleton, November 28, 1949. Near "Sycamore Tree."
- Horn Field, Dilley, Texas. Photographed, 6/5/51. F. A. Frank. Planted February, 1949.
- On the left is tau-saghyz (Scorzonera tau-saghyz) while on the right is a related species, S. tomentosa, introduced from Turkey. The latter is much more vigorous than tau-saghyz and is a better seed producer. It also contains some rubber, but not as high a percentage as kok-saghyz or tau-saghyz. Photographed, September, 1949, U. S. Natural Rubber Research Station, Salinas, CA.
- The plant on the left is a first generation hybrid between guayule and P. stramonium. The one on the right is pure guayule. Both were planted in April, 1949. The parchment bags on the hybrid are for making controlled crosses. Photographed, September, 1949. U. S. Natural Rubber Research Station, Salinas, CA. Left plant project nursery Row P73, Plant 10 (49244-21). Right plant is Plant 11 in same row (Culture 49359-1).
- Plant 47-93-10. Probably tapetal cell endomitotic metaphase or prometa-phase. 1800 X. 8/48, photo. (Poor print).

- Plant 47-93-10. Prob. tapetal cell endomitotic metaphase or prometaphase. 900 X. 8/48, photo.
- Plant 49181-5. Metaphase. 34 chromosomes, guayule. Photo, 8/48.
- Guayule root tip (4265-II; 56 chromosome).
- Tau-saghyz. Positives by Mr. Oliver Shafter, CA, 1947.
- Scorzonera tau-saghyz. Karyogram (film) & print. Photographed by C. Taylor, Salinas, CA, 1948.
- Scorzonera tau-saghyz. Chromosomes, camera lucida. By Carl Taylor, Salinas, April, 1948.

- Multiple Blendors. Also, showing automatic pipette delivery. Photographed, May, 1953, Salinas, CA.
- Guayule-Stramonium hybrid. List of photographed plants enclosed. April, 1950 - negatives only.
- Stramonium-guayule backcrosses 1730, 1731, 1732. April, 1950. Negatives only.
- P56-11 Seedlings, April, 1950, Negative only.
- Plantings of guayule in Spain by Ramos and Cabra, showing shrub of 1 year, 4 year, and 6 years old. Photographed, June, 1950.
- Stanford Nursery, about 1950.
- Prints and negatives of 1827 and lettuce seed planter. Taken Spring, 1951.
- Guayule hybrid. 90 chromosome guayule x *P. stramonium* hybrid on right. Guayule on left. Planted, spring, 1948. Photographed, August 30, 1951.
- Comparison of hybrids grafted on guayule and stramonium rootstock. 11/12/51.
- Seedlings and seeding methods, Spence Field, June, 1951.
- View of breeding plot near greenhouse. Kok-saghyz, Tau-saghyz, Tragopogon porrifolius, Scorzonera hispanica, guayule in background. August, 1951.
- Scorzonera hispanica, August, 1951.
- Horn Field, Dilley, Texas. Planted, February, 1949. Clean cultivated, 1949 and 1950. Photographed, 6/5/51.
- Horn Field, Dilley, Texas. Planted, February, 1949. Cultivated, 1949 only. Photographed, 6/5/51.
- Horn Field, Dilley, Texas. Planted, February, 1949. No cultivation. Photographed, 6/5/51.
- Livingston Lease, 1951, Greenfield, CA.

- Guayule planting, Shafter, CA, 1951.
- General view, Spence Field, Summer, 1951.
- Project Nursery, 1951, Salinas, CA. Segregations in 36-chromosome F₂'s and hybrids.
- Kubik Lease, 1951, Greenfield, CA.
- Pozo, CA, 1951. Showing burned-over area and evidence of bromus competition in area planted with guayule.
- Guayule plantings, Fort. Ord., September 4, 1951.
- Treatment No. 4 - Severe storage conditions for 1 week; plant in greenhouse. Left - 1950 Nursery with no living plants. Right - 1949 Nursery stock with 25 of the 40 plants growing. (See detailed annual report, April, 1951).
- 4 shoes, from left to right. Bottom view of "guayule" shoe - front view of guayule shoe, front view of carrot Planet Jr. Shoe No. K783, and the carrot shoe with the two furrowers brazed on the bottom. The guayule shoe has two 1-inch rods brazed on bottom which make furrows 1/4 inches apart. The center tongue of the shoe spreads the seed so practically all of it lodges in the bottom of the two furrows. Ordinarily, the guayule shoe would not be very deep in the ground, but if unevenness occurs, the wings brazed on the guayule shoe will clear the excess soil away so in no case will the seed be covered more than 1/4-inch deep. Photographed at Salinas, CA, 2/2/51. (2 views).
- 4 planting shoes. Photographed, July, 1951, Salinas, CA.
- Front view and bottom view of guayule planting shoe. The guayule shoe has two 1-inch rods brazed on bottom which make furrows 1/4-inch deep, 1 1/4 inches apart. The center tongue of the shoe spreads the seed so practically all of it lodges in the bottom of the two furrows. Ordinarily, the guayule shoe would not be very deep in the ground, but if unevenness occurs, the wings brazed on the guayule shoe will clear the excess soil away so in no case will the seed be covered more than 1/4-inch deep. Photographed at Salinas, CA, 2/2/51.
- Colored slides showing plantings in Texas. Received from L. G. Burk, 9/4/52.

- Stanford guayule hybrids. Left: 1386-1340, 15-19. Right: 1408-1362, 17-11. April, 1952.
- Stanford guayule hybrids. Left: 1386-1340, 15-19. Right: 1408-1362, 17-11. April, 1952.
- "Hair" mite (Aceria sp.) injury on guayule. Greenhouse, Spring, 1952.
- Plant breeding nursery, U. S. Natural Rubber Research Station, Salinas, CA. Center row contains Variety 593, guayule. On both sides are new hybrids which, by actual weight, are over twice as large as 593. September, 1952.
- Negatives - 2x2 slides. Percentage germination of guayule seed with different ages and treatment. Comparison of hevea, guayule, and synthetic rubbers in large truck tires.

- Fig. 4. Progeny plants of haplo-polyplloid 42354. Family 47-93 (s. labels) came from the cross 42354 x SP-14 (sexual with 36 chromosomes). Plant 3 is of the maternal type and has 37 chromosomes, plant 7 has 54+ and plant 10, 72+. Family 47-92 came from the reciprocal cross SP-14 x 42354 and all its sibs had 36+ chromosomes.
- Guayule plant 47-93010, 73+1 chromosomes. Normal tapetal cell prophase. Slide h17-1 105.9 x 38.9 in records.
- Guayule Variety 593, 73+2 chromosomes. (Photo = 146 + 4 chrom. cell ???) Probably a tapetal cell with two nuclei closely compressed together or one single, doubled chromosome number nucleus. Appeared to be one nucleus. This is probably a tapetal cell endomitotic prophase. ???? Picture taken March 8, 1949.
- Diakinesis, Plant 48-2505-13 guayule, 36 + 4 chromosomes.
- Trichomes of guayule, and guayule x stram. 12/49, Photo.
- Kodachrome prints of Feustel and Hunter in Spence Field, 1950.
- Tomato root tip (Jubilee, commerc.), 6/8/48.
- Four pollen grains, no pollen tube. (Incompatible).
- Germinating pollen grains (incompatible). Short tube.
- Variety 593, guayule. 49c7 Abnormal prophase, 90X.10X = 900X.
- Variety 593, guayule. 49c7, 20 bivalent diakinesis. 90X.20X = 1800X.
- Variety 593, guayule. 49c8 Normal tapetal prophase. 90X.10X = 900X.
- Variety 593, guayule. 49c7 Normal diakinesis. 90X.10X = 900X.
- Variety 593, guayule. 49c9 Normal chrom. no. abnormal prophase. 90X.10X = 900X.
- Variety 593, guayule. 49h31 Diakinesis.
- Variety 593, guayule. 49i1 Diakinesis.

- Variety 593, guayule. 4911. Diakinesis.
- Variety 444. Tapetal prophase.
- 49 MI. 49h19. MI. 49160-3 (47-92-12 x P. stramonium).
- 49h18. Diakinesis. C49160-3 (47-92-12 x P. stramonium).
- Guayule and guayule x stram. trichomes. 12/49, photo.
- Kok and Krim saghyz field.
- Plant D108-10, Diakinesis. 91 + 2 chromosomes. Photo, 9/49. Miscellaneous negatives (3).
- Miscellaneous SP-1⁴ negatives, 11/49.
- Variety 593. Endomitotic prophase (?). 1800X. Photo, 10/48.
- Tapetal prophase, Variety 593. Photo, 8/48. 900X.
- 20 bivalent diakinesis in Variety 593 (73 + 2 chromosomes). Photo, 8/48.
- This envelope contains the photographic negatives of the tables shown here. Included are Rubber Production of Two-year-old Hybrids (Guayule x P. stramonium) Compared to Guayule Checks, Different Modes of Reproduction of One 72-chromosome Guayule Plant, and Reproduction and Chromosome Numbers in Crosses Between Guayule and P. stramonium. Photographed, September, 1949, at U. S. Natural Rubber Research Station, Salinas, CA.
- Variety 593, guayule. 49c9 Normal Chrom. No. ABNORM. PROPHASE - 90X, 10X = 900X. Photo shows most of the chromosomes.
- Variety 593, guayule. 140+ chromosome cell. 3/4/49.
- Tau-saghyz root tip, 6/8/48.
- Tau-saghyz. Negatives (black & white) taken by Mr. Oliver at Shafter. April, 1947.

- Root tip, tomato (Jubilee, commercial), 6/8/48.
- Variety 444, tapetal prophase.
- Tau-saghyz root tip, 6/8/48.
- Pollen tubes.
- Pollen tubes (prints) taken by Mr. Oliver, Stanford, November, 1947.
- Miscellaneous picture of Texas plantings, including a pilot planting on the Halff-Oppenheimer Ranch, planted Spring, 1950, near Pearsall, Texas. Photo taken by N. H. Hunt and received from Dr. Frank.
- Cherkasov planting in Malibu Canyon, CA, September 8, 1950.
- Krim-Saghyz Experiment. Planted from seed November, 1948. Picture taken on October 25, 1949. M1 - High moisture, S1 - Close spacing, 31 plants per foot, F4 - Complete fertilizer (N.P.K.).
- Polarding Experiment. Plant from Plot 1-C-a. Polarded September, 1947 and harvested, October, 1949. Photographed, October 30, 1949. Picture taken to show root growth on regrowth. The main stem was cut below surface of soil in polarding. Plant on right in picture a stem broken from main plant shown on left.
- Guayule, plant SP-14. 1800X diakinesis photo. 18 bivalents, 23 chiasmata. Photographed, October 31, 1949 from permanent slide d7-1.
- Second generation segregants from a cross between low chromosome guayule and P. stramonium. This represents normal sexual segregation. Note the plant in the upper-right which has broad, stramonium-like leaves and the small guayule-like plant in the lower left. The other two plants are various stages of intermediates. Thus, there is the possibility of obtaining desirable, vigorous segregates with a fair rubber content from this cross which can then be used for crossing on apomictic guayule to fix the hybrid, and to produce one with a higher rubber content than the straight P. stramonium x guayule cross heretofore obtained. Photographed, September, 1949. U. S. Natural Rubber Research Station, Salinas, CA. Top plants are Plants 31 and 32 (left to right) in project nursery Row P5. Lower plants are Plants 11 and 12 (Left to right) in Row P13.
- 36-chromosome tapetal cell.
- 49128 Metaphase I, C49181-5.

- 49h18 Diakinesis. 49160-3 (47-92-12 x *P. stramonium*).
- 49h26 Diakinesis. 45-32-2 (4255 x *P. stramonium*).
- 49128 Metaphase I. c49181-5.
- 91-chromosome hybrid between guayule and *P. stramonium*. 1800X. By careful focusing during counting, the following were observed, although they may not all show in the illustration: 1 hexavalent, 7 tetravalents, 3 trivalents, 17 bivalents, 14 univalents plus 2 univalent B chromosomes. Photographed, September, 1949 by Wm. Mishanec, U. S. Natural Rubber Research Station, Salinas, CA.
- Guayule, plant 45-32-2. Diakinesis. 15 bivalents, 2 trivalents, plus 4 B chromosomes, 2 of which are paired. 1800X magnification. Photographed, September, 1949.
- Large guayule-stramonium hybrids, Spence Field, October 6, 1952. Also F₁'s.
- Three month old guayule plantation.
- Negatives, 1948, self-incompatibility diagrams.
- Krim-Saghyz Experiment. Seed planted November, 1948. Picture taken October 25, 1949.
- Plant C49365-2. Diakinesis. 18 II 1 I = 18 chiasmata = 37 chromosomes. A maternal type guayule plant derived from the 42354 haploid F10 from Stanford. Photographed, September, 1949. USDA Rubber Research Station, Salinas, CA.
- Self-compatible pollinated stigmata. Photographed by Mr. Oliver.

Guayule Production Project
Photographic Album
February 1 - June 15, 1951
Salinas, Calif.

Bedding. Series 1 - 3.

No. 1. Location: John W. Ryan Farm, La Pryor, Texas. Date: March 17, 1951.
Description: Making 36-inch beds.

No. 2. Location: Keller Farm, Crystal City, Texas. Date: March 7, 1951.
Description: Tractor unit for making 16-inch beds.

No. 3. Location: Keller Farm, Crystal City, Texas. Description: Farmall C
tractor equipped with bedding shovels for laying out 16-inch O. C. beds.

Harrowing. Series 4 - 5.

No. 4. Location: W. F. Koehler Farm, La Pryor, Texas. Date: April 3, 1951.
Description: Harrowing 36-inch beds with spike tooth harrow.

No. 5. Location: W. F. Koehler Farm, La Pryor, Texas. Date: April 3, 1951.
Description: Harrowing 36-inch beds with spike tooth harrow.

Cultipacking. Series 6 - 9.

No. 6. Location: Guyler Farm, Crystal City, Texas. Description: Culti-
packing 20-inch rows with Schmeiser cultipacker.

No. 7. Location: Wood Farm, Batesville, Texas. Date: March 8, 1951. De-
scription: Cultipacking 38-inch beds before planting with a Schmeiser
roller.

No. 8. Location: Wood Farm, Batesville, Texas. Date: March 8, 1951. De-
scription: Second cultipacking of 38-inch beds.

No. 9. Location: Wood Farm, Batesville, Texas. Date: March 8, 1951. De-
scription: Before and after cultipacking of 38-inch beds.

Planet Jr. Seeder. Series 10 - 17.

No. 10. Location: Winter Haven Experiment Station, Crystal City, Texas. De-
scription: Side view of Planet Jr. 300A seeder equipped with No. K769

4-inch plow, No. 512168 IHC cover, and 4-inch flat press wheel.

No. 11. Location Winter Haven Experiment Station, Crystal City, Texas.
Description: Bottom view of Planet Jr. seeder unit.

No. 12. Location: Winter Haven Experiment Station, Crystal City, Texas. Description: Opener and cover as used on the 300A Planet Jr. seeder.

No. 13. Location: Winter Haven Experiment Station, Crystal City, Texas. Description: Types of openers: left, 2-inch plow, right, 4-inch plow or carrot shoe.

No. 14. Location: Winter Haven Experiment Station, Crystal City, Texas. Description: Planet Jr. 300A seeder equipped with modified No. K712 muck land plow, covering chain, and flat press wheel. The muck shoe was modified by grinding off approximately 1 inch from the runner.

No. 15. Location: Winter Haven Experiment Station, Crystal City, Texas. Description: Modified muck shoe and covering chain as used on Planet Jr. 300A seeder unit.

No. 16. Location: Winter Haven Experiment Station, Crystal City, Texas. Description: Left, modified muck shoe. Right, 4-inch shoe.

No. 17. Location: Winter Haven Experiment Station, Crystal City, Texas. Description: Left, unmodified muck shoe; right, modified muck shoe. The narrow runner was removed in an attempt to spread the seed over a 1-inch band as compared with the line seeding produced by the conventional muck shoe. (The one on the right is the one found best.)

Planting. Series 18 - 22.

No. 18. Location: Holmes Farm, La Pryor, Texas. Description: Contour planting of guayule on two rows spaced 12 inches apart on 36-inch beds. Sled-type of planter frame equipped with 300A seeder units.

No. 19. Location: Keller Farms, Crystal City, Texas. Description: Rear mounted planter equipped with No. 300A planet Jr. seeder units. Rows spaced 16 inches O. C.

No. 20. Location: Guyler Farm, Crystal City, Texas. Description: Rear mounted planter equipped with No. 300A Planet Jr. seeder units. Rows spaced 20 inches O. C.

No. 21. Location: Melvin L. Copenhaver Farm, Crystal City, Texas. Date:

March 15, 1951. Description: Rear mounted sled planter equipped with No. 300A Planet Jr. seeder unit. Two rows spaced 12 inches O. C. on 36-inch beds.

No. 22. Location: Wood Farm, Batesville, Texas. Date: March 8, 1951. Description: First planting of guayule. Two rows per 38-inch bed.

Irrigation. Series 23 - 35.

No. 23. Location: Holmes Farm, La Pryor, Texas. Description: Use of metal ditch stops for control of water on row irrigation.

No. 24. Location: Holmes Farm, La Pryor, Texas. Description: Use of metal ditch stops for control of water for furrow irrigation of contour planting.

No. 25. Location: Holmes Farm, La Pryor, Texas. Description: Use of metal ditch stops and control of water on row irrigation.

No. 26. Location: Keislings Farm, El Indio, Texas. Description: Row irrigation using grass, twigs, and metal ditch stops for water control. All guayule seed should be sub-irrigated for best emergence.

No. 27. Location: Keislings Farm, El Indio, Texas. Description: Controlling the flow of water for row irrigation with cotton stalks, grass, etc.

No. 28. Location: Guyler Farm, Crystal City, Texas. Description: Use of double ditch for row irrigation. The upper ditch serves as an outlet drain for the upper rows while the lower ditch supplies water for the lower rows.

No. 29. Location: Guyler Farm, Crystal City, Texas. Description: Tube irrigation of guayule.

No. 30. Location: Wood Farm, Batesville, Texas. Description: Installing siphon tubes for furrow irrigation of guayule nursery seeding. Siphon tubes made of 2-inch diameter light metal tubing.

No. 31. Location: Wood Farm, Batesville, Texas. Date: March 22, 1951. Description: Siphon irrigation for 38-inch beds, rows spaced 12 inches O. C.

No. 32. Location: Wood Farm, Batesville, Texas. Date: March 22, 1951. Description: Siphon irrigation for 38-inch beds, rows spaced 12 inches O. C.

guayule Prod. Proj.

No. 33. Location: Wood Farm, Batesville, Texas. Date: March 22, 1951. Description: Siphon irrigation for 38-inch beds, rows spaced 12 inches O. C.

No. 34. Location: Oscar Johnson Farm, La Pryor, Texas. Date: March 16, 1951. Description: Left to right, Mexican; Mr. Oscar Johnson; Mr. Julius Robinson, Project Manager; Mr. Albert Ray, Field Man, observing operation of tube irrigation.

No. 35. Location: Johnson Farm, La Pryor, Texas. Description: Furrow irrigation of guayule nursery seeding. Pipe tubing used for the control of water from the main irrigation ditch.

Cultivation. Series 36 - 45.

No. 36. Location: Ryan Farm, La Fryor, Texas. Description: Guayule nursery planting after cultivation.

No. 37. Location: Ryan Farm, La Fryor, Texas. Description: Cultivating guayule nursery stock with Farmall C tractor equipped with rotary cultivator, off-barring disk, and middle sweeps.

No. 38. Location: Ryan Farm, La Fryor, Texas. Description: Rotary cultivator mounted on Farmall C. Disk hillers are used to off-bar the two-row bed ahead of the rotary wheel. The 6-inch rotary wheel is used for cultivation between the 12-inch spaced rows.

No. 39. Location: Ryan Farm, LaFryor, Texas. Date: May 21, 1951. Description: Guayule nursery before cultivation.

No. 40. Location: Ryan Farm, La Fryor, Texas. Date: May 21, 1951. Description: Guayule nursery shown in No. 39 after cultivation.

No. 41. Location: La Fryor, Texas. Description: Double row planting on 36-inch bed illustrating the effect of planting too near the edge of the bed. The bed sloughs off leaving the plants unsupported.

No. 42. Location: Ryan Farm, La Fryor, Texas. Description: General view of guayule nursery planting.

No. 43. Location: Melvin I. Copenhaver Farm, La Fryor, Texas. Date: May 19, 1951. Description: Planted March 17, 1951, cultivated May 3, 1951.

Guayule Prod Proj.

No. 44. Location: Melvin L. Copenhaver Farm, La Pryor, Texas. Date: May 19, 1951. Description: Close-up of row shown in No. 43.

No. 45. Location: Melvin L. Copenhaver Farm, La Pryor, Texas. Date: May 19, 1951. Description: Close-up of side of the guayule row shown in No. 43.

Hand Weeding. Series 46 - 47.

No. 46. Location: Koehler Farm, La Pryor, Texas. Date: May 19, 1951. Description: Hand weeding guayule nursery (planted March 15, 1951).

No. 47. Location: Koehler Farm, La Pryor, Texas. Date: May 19, 1951. Description: Hand weeding guayule nursery (planted March 15, 1951).

Oil Spraying. Series 48 - 49.

No. 48. Location: Guyler Farm, Crystal City, Texas. Description: Effect of oil spray for weed control. The clumps of Johnson grass in the background were slightly burned but continued to grow.

No. 49. Location: Guyler Farm, Crystal City, Texas. Description: Hand weeded section in unsprayed row.

Transplanting. Series 50 - 57.

No. 50. Location: F. W. Pulliam Farm, Crystal City, Texas. Date: May 25, 1951. Description: Not irrigated. Transplanted March 13, hand hoed April 8 and May 9, 1951.

No. 51. Location: F. W. Pulliam Farm, Crystal City, Texas. Date: May 25, 1951. Description: Guayule transplanted March 13, 1951, irrigated March 13, 1951, hand hoed April 9 and May 9, 1951.

No. 52. Location: Dilley, Texas. Description: Dry land transplanting of guayule.

No. 53. Location: Dilley, Texas. Date: May 22, 1951. Description: No cultivation, unirrigated land. (With white background shield.)

No. 54. Location: Dilley, Texas. Date: May 22, 1951. Description: Cultivated guayule, unirrigated land. (With white background shield.)

No. 55. Location: Dilley, Texas. Date: May 22, 1951. Description: No cultivation, unirrigated land.

Guayule Prod. Proj.

No. 56. Location: Dilley, Texas. Date: May 22, 1951. Description: No cultivation, unirrigated land.

No. 57. Location: Dilley, Texas. Description: Dry land transplanting of guayule.

Pictures from Yuma, November, 1944:

- 1 yr. old direct seeded guayule, 11/10/44, Yuma, Arizona.
- 1 yr. old direct seeded guayule, 11/10/44, Yuma, Arizona.
- 1 yr. old direct seeded guayule, 11/10/44, Yuma, Arizona.
- 12 month old guayule from seed, Yuma, small plants; no alfalfa large plants, 3 yr. alf.
- Ditch in sandy mesa, Yuma, 1944.
- 12 month old guayule from seed, Yuma, small plants; No alfalfa, large plants, 3 yr. alf.
- 12 month old guayule from seed, Yuma, small plants; no alfalfa, large plants, 3 yr. alf.
- 20 month old guayule, Yuma in F.C.7.3. High, moist + 20#NO₃, 50#PO₄.
- Fisher, negatives retouched.

Exp. Alisal Nursery (Photos and negatives)

- Exp. 59, Alisal B Irr., October, 1944.
- Exp. 59, Alisal B Irr., October, 1944.
- Exp. 59, Alisal B Irr., October, 1944.
- Exp. 59, Irr. Alisal B, October, 1944.
- Exp. 59, Alisal B Irr., October, 1944.
- Exp. 61, Bryan Block II, October, 1944.

Exp. 5, Bryan Field, 1st 6 weeks after seeding.

- Exp. 5, July 25, 1943, seeded June 14, 1943.
- Exp. 5, July 25, 1943, seeded June 14, 1943.

- Exp. 5, July 25, 1943, seeded June 14, 1943.
- Exp. 5, July 25, 1943, seeded June 14, 1943.
- Exp. 5, July 25, 1943, seeded June 14, 1943.
- 1st direct seeding guayule in the field, Bryan Farm. Seeded June 14, 1943. Photo September 28, 1943. D. C. Tingey. Single and double rows form bed. Rows 28", Exp. 5.
- Exp. 5, July 10, 1943, seeded June 14, 1943.

- Exp. 27, seeded July 7; photo July 10, 1943. Bryan Field, direct seeding.

Soil Moisture: (Figures)

- Figure 1. Calibration curve obtained by 3 separate determinations, using different plaster of paris blocks.
- Figure 1. Calibration curve obtained by 3 separate determininstions, using different plaster of paris blocks.
- Figure 4. Calibration curves.
- Figure 3. Relation of the average moisture content of the entire soil block to the moisture content at the center of the block.
- Figure 3. Relation of the average moisture content of the entire soil block to the moisture content at the center of the block.
- Figure 1. Calibration curve obtained by 3 separate determinations, using different plaster of paris blocks.
- Figure 4. Calibration curves.
- Figure 3. Relation of the average moisture content of the entire soil block to the moisture content at the center of the block.
- Figure 3. Relation of the average moisture content of the entire soil block to the moisture content at the center of the block.

- Figure 2. Diagram showing the faces of the soil block which were removed before sampling for moisture content.
- Figure 2. Diagram showing the faces of the soil block which were removed before sampling for moisture content.
- Figure 4. Calibration curves.

Picture of fertilizer distributor:

- Fertilizer distributor, 2-row, shop made, accurate to the ounce. John Deere Fertilizer Distributor boxes, Holland planter and other miscel. parts. Easily adjusted to row widths 24, 28, etc. - 42" rows. Attaches to power lift of Ford tractor. A. W. Crain, B.P.I.S. & A.E., Pearsall, Texas.

Exp. 32, Soil Moistures: (Graphs)

- Chular Loam, average soil moisture percentage by dates, 1943, Exp. 32.
- Hanford Sandy Loam, average soil moisture percentage by dates, 1943, Exp. 32.
- Bryan Loam, average soil moisture percentage by dates, 1943, Exp. 32.

Enlargement:

- One year old direct seeding, Yuma Mesa, November, 1944. Left - after 3 years alfalfa. Right - no green manure.

Probably Spence Field I and II, 1943, soil moistures: (Negatives)

- Average soil moisture percentage by dates, 1942, Spence Field, Block I.
- Average soil moisture percentage by dates, 1943, Spence Field, Block I.
- Average soil moisture percentage by dates, 1943, Spence Field, Block I.
- Treatment No. 1, irrigated July.
- Treatment No. 2, irrigated July and August.

undle No. 1
ictures and negatives

- Treatment No. 3, irrigated July and August and September.
- Treatment No. 4, irrigated July, August, September, and October.
- Treatment No. 5, irrigated October.
- Treatment No. 6, not irrigated.

Seeding machine, Davis (Photo and negative):

- Figure 1. Vertical and horizontal elevations of guayule seeding machine and soil profile of seeded ridges. A-Vertical view. B-Horizontal view. C-Seeded profile.

Wm. Tract, types of beds, exp. 16; effect of irrigation, exp. 2: (Negatives)

- Figure 1. Types of beds planted.
- Figure 1. Vertical and horizontal elevations of guayule seeding machine and soil profile of seeded ridges. A-Vertical view. B-Horizontal view. C-Seeded profile.
- Figure 1. Effect of irrigation on shrub growth, rubber content and yield at Anthony, N.M., 1944.

- Extra pictures and letters.
- Gerber (Spencer) Indicator Plot C-1, planted Spring, 1942, photographed January, 1945.
- Gerber (Barneson) Indicator Plot C-2, plot planted Spring, 1942, photographed January, 1945.
- Illustration 1. Graham Indicator Plot C-3, December 2, 1943, 20 month old guayule. Looking west across center of plot. Plants to the right of lane were irrigated in 1942. Scattered growth of plants (size 12" x 14") in immediate foreground are on Brentwood silty clay, gravelly subsoil. Best survival of shrubs occurs on soils of the Cortina series (center). In the far west part of the plot on Brentwood silty clay and Cortina clay loam, gravelly subsoil, (distant left), the survival is poor and the growth extremely variable but mostly poor. White stakes are 18 inches high.
- Illustration 2. Graham Indicator Plot C-3, December 2, 1943, 20 month old guayule. Looking north across the west half of the plot. Shows: (1) cloddy tilth of the soil, (2) large bare spots, (3) general poor survival on this side of plot and (4) extreme differences in size of plants. The larger stakes are 18 inches high. The near boundary of Brentwood silty clay is just a few feet north of the near measurement stake. The boundary passes northeast and west from the stake. Better survival and growth of shrubs growing on the Cortina soils can be seen in the far right. Plant measured in foreground is 7 inches high.
- Illustration 2. Graham Indicator Plot C-3, December 2, 1943, 20 month old guayule. Looking north across east half of plot. Plant measured in foreground is 8 inches high. Plant measured at far right is 10 inches high. Plant measured just north of center lane and just to left of line of site with oak tree is 13 inches high. Plant measured on extreme left is 14 inches high. Small white stakes are subplot markers. Poor survival is shown on Brentwood soils on extreme east and north sides are nearing center of plot at extreme left. Small plants near extreme left are growing on Cortina clay loam, gravelly subsoil, that has a very porous sandy subsoil below 36 inches.
- Illustration 1. Otterson Indicator plot C-4, December 2, 1943. View of 20 month old guayule from center lane on east side of plot, showing: (1) level topography of region, (2) levee of irrigation canal running west between two fence lines, (3) slightly uneven relief of plot indicated by position of fence posts along west side, (4) marsh grass growing in ponded area in southwest corner, (5) bare area where irrigation and flooding killed guayule, (6) large plants (15 inches high) and moderate plants in

foreground, probably feeding on the capillary fringe from a water table in soil area of Tehama loamy fine sand, 1 and 2 percent south-facing slope south of center lane, growing on Tehama sandy loam, imperfectly drained, high water table, and (8) rather low survival of small plants to right of center land and larger plants beyond, all on Tehama loamy sand. (Measured small plant is 8 inches high).

- Illustration 2. Otterson Indicator Plot C-4, December 2, 1943. Looking north across plot just east of mid-point, showing: (1) gentle slope to east from west and to north from center (low position of northeast fence corner), (2) good survival and best growth on 23-64A/g on far right, (3) low survival and variable growth on 23-56A/mg in foreground (measured plant 13 inches high), (4) complete mortality on 23-56W (extreme left near foreground), and (5) medium growth of plants on 23-36A/mg of center lane).
- Illustration 1. Wolcott Indicator Plot C-5, December 4, 1943. Looking towards the northwest corner of the plot from just east of the center lane on the south side. Shown are: (1) reeds, brush, and traces along Shepherd Slough, (2) the compact, spherical woody dry-land shrubs on the right of the center lane, (3) low survival and many bare areas to the left of center lane on soils having a high water table, (4) very large size and dark shade of scattered, isolated plants growing where moisture has been abundantly available, and (5) dead plants in foreground to left of center lane.
- Illustration 1. Scofield Indicator Plot C-6, December 7, 1943. Diagonal view from southeast, looking northwest across plot. White stake, approximately 100 feet west of spade, is northwest corner marker. Stakes in foreground indicate characteristic differences in shrub size.
- Balsdon Indicator Plot C-7, plot planted Spring, 1943, photographed January, 1945.
- Balsdon Indicator Plot C-8, plot planted Spring, 1943, photographed January, 1945.
- Balsdon Indicator Plot C-8, plot planted Spring, 1943, photographed January, 1945.
- Balsdon Indicator Plot C-8, plot planted Spring, 1943, photographed January, 1945.
- Davis Indicator Plot C-9, plot planted Spring, 1941, photographed January, 1945.
- Davis Variety Indicator Plot C-10, plot planted Spring, 1941, photographed January, 1945.

- Galt Indicator Plot C-13, shrub on right center ridge of plot planted Spring, 1943; shrub on left of center ridge planted fall, 1943. Photographed, January, 1945.
- Isom Indicator Plot C-14, plot planted Spring, 1943, photographed January, 1945.
- Pleasanton Indicator Plot C-15, plot planted Spring, 1942, photographed January, 1945.
- Pleasanton Indicator Plot C-15, plot planted Spring, 1942, photographed January, 1945.
- Pleasanton Indicator Plot C-15, plot planted Spring, 1942, photographed January, 1945.
- Eugene Indicator Plot C-18, plot planted Spring, 1944, photographed January, 1945.
- Eugene Indicator Plot C-18, plot planted Spring, 1944, photographed January, 1945.
- Eugene Indicator Plot C-18, plot planted spring, 1944, photographed January, 1945.
- Salinas Indicator Plot C-49, plot planted Spring, 1942. Photographed Fall, 1942. Shrub on left of center lane received irrigation. Shrub on right dry farmed.
- Salinas Indicator Plot C-50. Plot planted Spring, 1942. Photographed April, 1945. Shrub in foreground dry farmed. Shrub in background irrigated.
- Hammond Indicator Plot C-51, plot planted Spring, 1942, photographed January, 1945.
- Giffin Indicator Plot C-52. Shrub on left planted Spring, 1942. Shrub on right planted Spring, 1943. Photographed August, 1943.
- Illustration 1. Yearout Indicator Plot C-54, February 23, 1944. Twenty-three month old guayule viewed from tower of water tank west of plot. White stakes used in measuring plants are 18 inches long. There is an average survival of 36 percent. These are large plants. Those eligible for measurement in a spacing study ranged from 12 inches in height by

13 inches in diameter on 28" x 12" spacing to 17.2 inches in height by 22.1 inches in diameter on 28" x 30" spacing.

- Illustration 1. Ogle Indicator Plot C-55, February 18, 1944. View of year old guayule from east end of plot. Plants are nearly uniform in size, having average dimensions of 12 inches in height by 16 inches in width.
- Illustration 2. Ogle Indicator Plot C-55, February 18, 1944. View of year old guayule from west end of plot. There is considerable variation in the size of plants within different areas in this part of the plot. Plants measured on the right are about 8 inches high by 8 inches in diameter. The plants (one stake) measured on the left are about 12 inches high by 14 inches in diameter.
- Illustration 2. Ogle Indicator Plot C-55, February 18, 1944. View of year old guayule from west end of plot. There is considerable variation in the size of plants within different areas in this part of the plot. Plants measured on the right are about 8 inches high by 8 inches in diameter. The plants (one stake) measured on the left are about 12 inches high by 14 inches in diameter.
- Illustration 1. Nikolai Indicator Plot C-56, February 18, 1944. View of year old guayule from near east end of plot. Plants are 12 to 14 inches in height by 12 to 16 inches in diameter.
- Illustration 2. Nikolai Indicator Plot C-56, February 18, 1944. View of year old guayule from west end of plot. The small plants in the foreground are on Dinuba fine sand, the larger plants in the background are on Dinuba loamy fine sand.
- Illustration 1. U. S. Grape Station Indicator Plot C-58, February 19, 1944. View of year old guayule from north end of plot shows a good stand of large guayule, averaging about 13 inches in height by 16 inches in diameter.
- Illustration 2. U. S. Grape Station Indicator Plot C-58, February 19, 1944. View of year old guayule from south end of plot, showing measurable differences in size of plants on different depths of Exeter sandy loam over hardpan.

- Illustration 1. Sanger Indicator Plot C-59, May 23, 1944. Diagonal view of plot from southwest corner, showing small size of 5 month old guayule. Stake in foreground measures a plant 5 inches high by 6 inches in diameter in a 70 percent stand on San Joaquin sandy loam. The stake in the

background measures a plant having only a few leaves on the transplant stem. This is on San Joaquin loam, where the survival is about 50 percent. The north part of the plot was irrigated days prior to the date of this picture. The dark shaded areas show where moisture does not readily penetrate through a dense clay subsoil.

- Illustration 1. Weeth Indicator Plot C-60, May 24, 1944. This view of 25 month old guayule taken from the east end of the plot shows the general fair survival and large size of plants. Plants in the immediate foreground are spaced 28 inches by 12 inches and are about 14 inches high by 16 inches in diameter. Bare areas and areas of poor survival are affected with moderate and strong concentrations of saline salts.
- Illustration 1. Weeth Indicator Plot C-60, May 24, 1944. This view of 25 month old guayule taken from the east end of the plot shows the general fair survival and large size of plants. Plants in the immediate foreground are spaced 28 inches by 12 inches and are about 14 inches high by 16 inches in diameter. Bare areas and areas of poor survival are affected with moderate and strong concentrations of saline salts.
- Illustration 1. Ducor Indicator Plot C-61, May 26, 1944. This view of 5 month old guayule was taken from the northwest corner. These plants are about 8 inches high by 8 inches in diameter (measurement of foliage). Note very fine, blocky tilth of soil.
- Illustration 3. Ducor Adobe Clay. Location: 3/4 mile south of Ultra in Pixley area, CA, secs. 1 and 6 between R. 26 E. and R. 27 E. in T. 23 S. Site: East-facing road cut, exposing profile on 3 percent slope 100 feet below crest of hill. Profile: Showing sharpness of zone of lime accumulation in a wavy horizon usually occurring at about 36 inches below the surface. Note medium angular, blocking soil aggregates and poorly defined prisms in dark colored horizon above zone of lime accumulation. Parent material is light yellowish-brown, calcareous clay to sandy clay loam.
- Illustration 1. Nipomo Indicator Plot C-68, June 1, 1944. These 14 month old guayule are viewed from the southwest corner of the plot. There is about a 53 percent survival. The larger plants are growing on Marina loamy fine sand and Marina loamy fine sand, deep. The very small plants in the background are growing on Marina loamy fine sand, shallow.
- Illustration 1. Palmdale Indicator Plot C-70, March 20, 1944. Diagonal view of plot from near northeast corner. Plants are 23 months old. Note measured plants on 12-, 24-, and 20-inch spacing on right hand side. In height, they are 7-, 9-, and 11-inch, respectively.
- Illustration 2. Palmdale Indicator Plot C-70, March 20, 1944. Diagonal view of plot from northwest corner, showing few large plants in the slightly depressed area in the foreground. Plants are compact and have thick branches.

- Illustration 1. Little Rock Indicator Plot C-71, March 21, 1944. Diagonal view from southeast corner of plot. Two year old guayule growing under irrigation on Cajon loamy sand. Small plants on right are on Cajon gravelly loamy sand, from which surface soil has been removed to fill a broad, shallow wash immediately adjacent and to the left. Observe large plants growing on this "filled" area.
- Illustration 1. Moreno Indicator Plot C-72, March 31, 1944. Viewing plot from near north end. Plants on the right have been irrigated. Plants on the left half of plot received no irrigation in 1943 and only two irrigations in 1942. Note weeds and lupines in dry-land half of plot. The dry-land plants were in full bloom and had new green leaves. The irrigated-land plants remained dormant. Plants are 2 years old.
- Illustration 1. Hemet Indicator Plot C-73, March 29, 1944. View of abandoned plot, looking south across plot. Shown are some of the site characteristics of the plot and the small size of the plants remaining. Abandoned well with casing on extreme left. This plot was planted in April, 1942 on Ramona sandy loam. Note thick stand of small herbs, weeds, and grasses.
- Illustration 1. Banning Indicator Plot C-74, March 30, 1944. Looking south across parallel dead furrows in center of plot. First (near) stake is on B slope, second stake is in dead furrow, third stake is on ridge between furrows, fourth stake is in dead furrow, and fifth (last) stake is outside of furrow. Water had ponded between rows in the dead furrows. Deep wash is just south of plot. Plants are 2 years old.
- Illustration 2. Banning Indicator Plot C-74, March 30, 1944. View of exposed profile of Placentia sandy loam. The A horizons, extending to just above top of white stake, have a single grain structure, are hard in place, when dry, but are friable when moist. The darker brown clay B horizons have well-developed, small, angular, blocky aggregates. The B₂ horizon is dense and has a hard consistency when dry. Root distribution in the B₂ horizon is between the aggregates and between large blocks.
- Illustration 1. Indio Indicator Plot C-78, March, 1940. Looking east across plot from 50 feet north of southwest corner of plot. Smaller plants in foreground are growing on 72-64A. Larger plants in background are growing on 72-65A. Plants are 2 years old.
- Illustration 1. Holtville Indicator Plot C-79, March 16, 1944. View of site of Holtville Indicator Plot taken from gate on high-line canal. Observed: (1) scattered stand of plants on plot, (2) weed growth on canal levee and at west end of plot, (3) scattered growth of brush and small trace along fence-line and east of plot, (4) field of barley north of plot, and (5) water standing on the land surface in the immediate foreground. Plot was established in March, 1943.

- Illustration 2. Holtville Indicator Plot C-79. View of west portion of Holtville Indicator Plot taken from on top of canal levee, looking in due northwest direction. Observed: (1) scattered stand of guayule plants, (2) their bushy nature and moderate size as compared to the two 18 inch height stakes, (3) the light gray and crusted appearance of the furrow in the immediate foreground where water escaping from the canal runs and keeps the soil saturated, (4) weed and brush growth in the toe of the levee, (5) weeds along the north fence, (6) field of barley north of fence, and (7) levee that appears in the distance is earth from the deep drainage ditch.
- Illustration 1. Tamarack Indicator Plot C-80, March, 1944. General view of the site of Tamarack Indicator Plot as seen from the trail on the levee of the high-line canal west of the plot. Observe: (1) wavy appearance of field of barley, (2) extreme differences in size of guayule, (3) white appearance of the baked soil in the south furrows where an uncontrolled irrigation of April 17, 1944 coursed, (4) brush growing on bank of irrigation canal levee, and (5) scattered native brush south of field of barley. Plot was established in March, 1943.
- Illustration 2. Tamarack Indicator Plot C-80, March, 1944. Approximately 100 feet east of west end of plot in soil area labeled 99-86A/x (SA), looking north from 7th row. Observe (1) small size of plants and (2) short growth of barley adjacent to plot.
- Illustration 3. Tamarack Indicator Plot C-80, March, 1944. View of fair-sized plants and a good stand of barley growing in soil area labeled 317-86A on soil map approximately 800 feet from west end. View is taken looking northwest from 9th row from north side.
- Illustration 4. Tamarack Indicator Plot C-80, March, 1944. View taken diagonally from northwest to southeast across east end of 1943 spring planting. This is in a soil area of 317-86A/ xo (SS). The larger plants on the left have received supplementary moisture from water that has escaped into the plot to the north and south of the plot and from breaks in the irrigation ditch diverting water down the south rows of the plot to disperse over this part of the plot. It is assumed that the smaller plants have received only water from the 10 controlled irrigations in 1943.
- Illustration 5. Tamarack Indicator Plot C-80, March, 1944. View of field of barley growing in spotted alkali land. View taken looking northwest across N W $\frac{1}{4}$ SW $\frac{1}{4}$, section 28, T. 14 S., R. 13 E., or approximately 1/8 mile northwest of the indicator plot. It is probable that the alkali concentration is uniformly strong in the subsoil, as it is reported that alfalfa germinates in this field, grows to a height of 6 or 8 inches, and then is killed out following midsummer irrigations.
- Illustration 1. Brawley Indicator Plot C-81, March 23, 1944. View of portion of the Brawley Indicator Plot, showing one of the larger areas of the best survival of plants growing in an area of Imperial silty clay,

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slight saline surface, moderate saline subsoil. These plants are one year old.

- Scene at Salinas when the Project was getting under way. This crew is manufacturing 950 miles of "duckboards" for the nurseries.

- Guayule rubber factory at Salinas, CA. It is capable of producing about 10,000 pounds of rubber per day. The jar below contains samples of guayule rubber, both raw and vulcanized. Except for a higher resin content, the product is similar to that obtained from the hevea rubber tree, and is interchangeable with it for most purposes.

425470 - Dr. Francis E. Lloyd, author of "Guayule - A Rubber Plant of the Chi-huahuan Desert" a technical study of the guayule plant. The book is based on work done by the author between 1907 and 1909 but is still considered the authority on the botany of the plant.

- Several duplicates of plots C-1 through C-81.

434132 - Digging seedlings in a guayule nursery in the Salinas Valley, CA, 1943.

- NR Seed, General.

- Sexual plants with high chromosome number from an individual plant selection in a natural population of guayule and mariola. E. Gardner.

434136 - Planting crew on a guayule planter. The machine plants four rows at a time, setting the plants in the ground automatically. They are frequently manned by women. 1943.

- Guayule transplanting machine. Plants four rows at a time and covers about nine acres per day. Both men and women are used in the crews.

- Guayule planting machine in operation, Salinas Valley, 1943.

426594 - Cultivating guayule plants, 4 rows at a time, Wasco field plantation, near Bakersfield, CA, August, 1943, W. G. Baxter.

430237 - Cultivating guayule, Carter Ranch, near San Clemente, CA. Field was planted in February, 1944 and has had no irrigation.

434138 - Cultivating a two year old guayule field near Bakersfield, CA, 1944.

426578 - Beet and bean cultivator attached to case tractor, used for cultivating four rows of guayule plants soon after planting. Bakersfield Plantation, CA. March, 1943. W. G. Baxter.

426584 - Cultivator, attached to Ford Tractor, cultivating four rows of guayule at Wasco Unit, near Bakersfield, CA., August, 1943, W. G. Baxter.

426023 - Preparing seedbeds for sowing in a guayule nursery in Salinas Valley, CA.

- Seeding a guayule nursery in the Salinas Valley of CA. The seeder has two hoppers; one of which drops seed upon a finely prepared seed bed while the other covers it with a thin layer of sand. 1943. Picture by Schoeb.

- Newly seeded guayule beds at Salinas Nursery. W. B. Schceb.

- Harvesting guayule seedlings in a nursery at Salinas, CA. About 4,000 plants are packed per crate. The crates are lined with oiled paper and the roots of the plants covered with dry shingletow. The object is to keep down excess moisture and thus retard the development of fungus. Taken by Wm. Schoeb, 1944.

434133 - Lifting and sorting guayule seedlings in a nursery in the Salinas Valley, CA, 1943.

434131 - Topping guayule seedlings in the nursery preparatory to digging. Salinas CA Nursery, 1943.

430239 - Taking nursery inventory of guayule plants. The man digs up all the plants enclosed in a frame which enclose a strip one foot wide across each bed. One girl classifies the plants according to size and shape, and the second girl keeps score. Bell Ranch Nursery. 6/13/44.

422128 - The original 20 acre nursery of the Intercontinental Rubber Co. purchased by the Govt. These 1 year old seedlings were dug in the spring of 1942 and planted in about 900 acres of plantations in the Salinas Valley, CA. The overhead pipes are used to irrigate the beds, which require frequent watering, especially when the plants are small. The planks between the beds are called "duckboards" and are used as tracks upon which to run the machinery used in nursery operations. 530 acres of new nurseries were established immediately the Government took over the operation. 23,000 pounds of seed collected by the company over a period of years and all of the guayule seed in existence was planted in these new nurseries. Caterpillar Tractor Co., 5/13/42.

426591 - Bulldozer mounted on 50 h.p. Caterpillar in use digging drainage ditch at the San Mateo nursery, Southern CA District.

426582 - Ten foot cultipacker, attached to cletrac tractor. Mission nursery, Southern CA District.

426023 - Preparing seedbeds for sowing in a guayule nursery in the Salinas Valley of CA. This is one of several operations required to produce the very fine surface required for germination of guayule seeds. April, 1943.

426024 - Direct seeding of guayule seed in field. This method is still in experimental stage.

- Threshed seed vs. soaked seed, Santa Rita Nursery.

- Removing guayule seed from drier after treatment, Salinas, CA, 1944.

434116 - Guayule seed in storage at Salinas, CA, 1944. Figure is Carl Taylor, Chief Seedsman.

426587 - Guayule seed as it is packed in metal drums. Indio Nursery, Indio, CA, June, 1943.

- Guayule seed cleaning plant. Salinas, CA, 1944.

425461 - Guayule nursery in the Salinas Valley, CA. The plants are seedlings ready for digging.

422119 - Preparing the land for the 530 acres of guayule nurseries established

in the Salinas Valley of CA in March, 1942. From this raw land, finely prepared seedbeds were made for the planting of the delicate guayule seeds. The posts are for the support of the 100 miles of overhead irrigation pipes erected in the nurseries. Caterpillar Tractor Co., 5/13/42.

426591 - Bulldozer mounted on Caterpillar tractor is used digging a drainage ditch at San Mateo nursery near Oceanside, CA, April, 1943, W. G. Baxter.

426577 - Rototiller known as "Pulvi-Mixer" used for thorough pulverizing and mixing of soil in nursery beds prior to seeding. Alisal Nursery, Salinas, CA, March, 1943.

426579 - Six-foot tandem disc used in ground preparation prior to seeding nursery beds. Indio Nursery, CA. December, 1943. W. G. Baxter.

434127 - Oil spraying rig used for killing weeds in guayule fields. Salinas Valley, CA, 1944. Oil is emulsified with water and applied under high pressure. Kills weeds but does not damage guayule. 1944.

422118 - Installing the irrigation system for the new guayule nurseries established in the Salinas Valley of CA, in the spring of 1942. 530 acres of such nurseries were created from raw farmland in record time. Photo shows a bulldozer backfilling an irrigation pipe trench in one of the nurseries. Caterpillar Tractor Co., 5/13/42.

- Women workers in a guayule nursery take time out for lunch. Salinas Valley, CA, 1943.

425944 - Field of guayule in the Salinas Valley, CA. Wm. D. Schoeb, July, 1943.

430238 - Irrigating guayule plantation direct from well by means of portable irrigation pipe. San Mateo nursery plantation near San Clemente, CA, 6/14/44.

425472 - Dr. David Spence, internationally known rubber chemist and associated with the Intercontinental Rubber Company. He is shown here examining some guayule plants reserved for him for experimental purposes.

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426593 - Cultivating newly planted guayule field, Salinas, CA, March, 1943.
W. G. Baxter.

426581 - Cultivator attachment on Ford tractor. Wasco Unit, near Bakersfield,
CA. August, 1943, W. G. Baxter.

426590 - High pressure oil weed sprayer being used on newly planted guayule field
near Salinas, CA. March, 1943, W. G. Baxter.

426595 - Cultivating guayule plants with 10" lister shovels which make shallow
furrow for irrigation purposes. Bakersfield, CA, May, 1943. W. G. Baxter.

434117 - Hoeing a test plot of guayule on the BPI Experimental Farm near Anthony,
New Mexico, 1944.

426583 - Oil spray machine used in weed control in guayule field. Spray kills
weeds but does not injure guayule. Salinas Valley, CA. W. G. Baxter,
March, 1943.

- Mechanical weeding machine employing use of oil spray and water to kill
weeds. Bakersfield, CA. March, 1943. Baxter photo.

- Weighing a truck load of wild guayule shrub, newly baled and on its way
to the railroad. There are 99 bales in the load, which weighed 20,465
pounds or an average of 206 pounds per bale. Alpine, Texas.

434110 - Baling wild guayule shrub collected in the Big Bend country of Texas.
The baler is moved frequently in order to keep close to the pulling
crews. The shrub is baled immediately after pulling and shipped to the
Rubber Extraction factory at Salinas, CA. "O2" Ranch near Alpine, Texas,
1944.

- Loading wild guayule from the baler onto trucks for transportation to
the railroad. Bales average better than 200 lbs. in weight and are loaded
with a "jammer". "O2" Ranch near Alpine, Texas.

- Crew used to harvest wild guayule in the Big Bend section of Texas. The
men, mostly recruited from different places, live in a camp.

- Loading bales of wild guayule shrub onto truck with a "jammer". Bales
will be shipped to the rubber extraction factory at Salinas, CA. "O2"
Ranch near Alpine, Texas.

434108 - Baling wild guayule shrub collected in the Big Bend country of Texas.

An occasional bale is weighed in order to keep the weighted bales uniform. They weigh about 200 pounds each. "02" Ranch near Alpine, Texas, 1944.

- Unloading baled wild guayule into freight car to be shipped to the extraction factory at Salinas, CA. Alpine, Texas.
- Weighing a sample bale of wild guayule. An occasional sample bale is weighed in order to keep from getting bales too heavy. "02" Ranch near Alpine, Texas.
- Pulling wild guayule shrub in the Big Bend country of Texas. Plants are easily pulled by hand from the thin rocky soil. "02" Ranch near Alpine, Texas, 1944.

434109 - Baling wild guayule shrub collected in the Big Bend country of Texas. While an ordinary hay baler is used, the plant is so heavy that bales weigh 200 pounds or more each. "02" Ranch near Alpine, Texas, 1944.

434107 - Baling wild guayule shrub collected in the Big Bend country of Texas. Bales which weigh about 200 pounds each are hauled to the railroad at Alpine, Texas and shipped to the Rubber Extraction factory at Salinas, CA. "02" Ranch near Alpine, Texas, 1944.

- Baling wild guayule shrub collected in the Big Bend country of Texas. Bales which weigh about 200 lbs. each are hauled to the railroad at Alpine, Texas and shipped to the Rubber Extraction factory at Salinas, CA. "02" Ranch near Alpine, Texas, 1944.
- Pulling and loading wild guayule in a typical mixed stand of native shrubs. The two wheeled carts pulled by tractors follow the pullers wherever they may go. "02" Ranch near Alpine, Texas.

424597 - Guayule digger in operation. The machine digs two rows at a time, cutting the roots off well below the surface. The machine will dig about six acres per day. Salinas Valley, CA. Wm. Schoeb, Salinas copy, 1/15/43.

430241 - Guayule planted on dry land in March, 1943. This field has never been irrigated. Beaumont, CA, 6/14/44.

425460 - Field of guayule in the Salinas Valley, CA. The plants are two years old. This is "Spence Field" an experimental area belonging to the Govt.

426585 - Marvin land plane, used to smooth down ridges and fill in low places on land prior to planting guayule. Makes later irrigation cheaper and more

effective. Bakersfield, CA, May, 1943, W. G. Baxter.

426582 - Ten foot cultipacker, attached to cletrac tractor. Mission Nursery near Oceanside, CA, April, 1943.

426588 - Carryall scraper, six yeard, being pulled by heavy Allis-Chalmers tractor. Used in moving heavy dirt in preparing soil for irrigation prior to planting. Bakersfield, CA, May, 1943, W. G. Baxter.

426597 - Two offset discs operated by Mr. & Mrs. Fred M. Parker in a field prepared for guayule planting near Bakersfield, CA. July, 1943, W. G. Baxter.

426580 - Heavy offset disc used in ground preparation for guayule fields. Lerdo Unit, near Bakersfield, CA. Mrs. Fred M. Parker is operator. July, 1943. W. G. Baxter.

422120 - Preparing land for a guayule plantation in the Salinas Valley of CA, in the spring of 1942. The land is prepared as for any other row crop grown in this section. Caterpillar Tractor Co., 5/13/42.

- Three pictures of equipment taken by Cleveland Tractor Co. and given to us by Mr. Groce.

422121 - Preparing land for a guayule plantation in the Salinas Valley of CA, in the spring of 1942. The land is prepared as for any other row crop grown in this section. Caterpillar Tractor Co., 5/13/42.

434139 - Guayule planting machine at work in Salinas Valley, CA, 1943.

434137 - Guayule planting machine at work in a field near Bakersfield, CA. The machine plants four rows at a time, setting the plants in the ground automatically, 1943.

433941 - Transplanting guayule in the field. Machine plants four rows at a time and covers about none acres per day.

Miscellaneous, Wild Guayule:

- Natural stand of guayule near Tuna Spring, Fort Stockton, Texas. Comparative size of native shrub in ungrazed areas. June, 1944, W. A. Campbell.

- Native shrub near Tuna Spring, Fort Stockton, Texas. Contrast between

grazed and ungrazed areas. Plants outside fence ungrazed guayule. Note shrub by knife inside fence. June, 1944, W. A. Campbell.

- Natural stand of guayule near Tuna Spring, Fort Stockton, Texas. Contrast between grazed and ungrazed areas. (Sheep grazing). June, 1944, W. A. Campbell.
- Natural stand of guayule near Tuna Spring, Fort Stockton, Texas. Note group of plants outside fence and stubs of plants in grazed area. June, 1944, W. A. Campbell.
- Natural stand of guayule near Tuna Spring, Fort Stockton, Texas. Contrast between grazed and ungrazed stand. June, 1944, W. A. Campbell.

- Verticillium wilt. Portion of a guayule planting badly affected by verticillium. Verticillium wilt is a vascular disease caused by a fungus found in the soil. The disease has caused damage to several guayule plantings in the upper San Joaquin and the Salinas Valleys. The disease does not kill many plants but causes a stunting which reduces yield. Guayule is quite susceptible to the disease and since the crop requires a long growing period verticillium may cause considerable loss.
- Left to right: Congressmen, Wm. Cecil, John Z. Anderson, George Outland. In the factory at Salinas, 8/4/43.
- CA Senators Quinn, Hatfield and Donnelly are shown examining guayule seed at Salinas that is being collected for future plantings.
- CA Senators inspect guayule project at Salinas on July 8. The above picture shows them visiting the Bureau of Plant Industry greenhouses where experimental work is being conducted to produce guayule plants that will contain the highest possible content of rubber. Left to Right are: State Senator Hatfield, Mr. Raiford L. Holmes of the PPI, E. Garth Cham-pagne of the Forest Service, State Senator Quinn and State Senator Donnelly.
- CA State Senators Donnelly, Hatfield, and Quinn inspect Pilot Mill being installed at Salinas to determine the best method of processing guayule plants for the extraction of rubber. Mr. G. W. M. Phillips of the Bureau of Agricultural & Industrial Chemistry explains the machinery functions.
- L. to R: Congressman Wm. Cecil, John Z. Anderson, George Outland. In the factory, 8/4/43.

424573 - Plowing out one row of mature guayule shrubs with single standard U-type plows. Arguello Field near Salinas, CA.

419974 - Greenhouse test showings in connection with seed-treating experiments. At the right is Carl A. Taylor, Chief Seedsman, who took photo, 5/14/42.

424581 - Typical guayule plants grown with and without irrigation; during the first year after transplanting. Actually about 8 months after transplanting of 1-0 stock. Taken from Albert Hanson field and mounted. Carl A. Taylor, 12/28/42.

424404 - Guayule shrub in Arguello Field near Salinas, CA, dug and stacked ready for baling, Carl A. Taylor, 1/14/43.

419961 - Labor camp built and maintained by Emergency Rubber Project for workers. Carl A. Taylor, 4/30/42.

418475 - Sixrow guayule cultivator; front view. Intercontinental Rubber Co.

- Typical irrigated and unirrigated 1 year old guayule transplant.
- November, 1943, Tracy-Newman District, 8/17/44.
- Close-up view of mechanical hoeing job done by the guayule shuttle hoe.
Carl A. Taylor, 1/25/45.
- Holland 4 row guayule planter.
- Experimental plot near Indicator plot 9-12, Litchfield, Arizona. Spring planted half of plot. Photo 6/13/44, W. A. Campbell.

- Exhibit at State fair, Intercontinental Rubber Co.
- Feeding baled shrub to soaking tank. Baled shrub is fed to the soaking tank in which a slowly moving belt propels it at such a rate as to provide a soaking period of about 10 minutes. The belt is so arranged as to lift the bales from the tank at the discharge end. The soaked bales are broken open and washed in a washing conveyor. The purpose of the soaking tank is to soften clayey materials to make them more susceptible for removal under sprays. J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943.)
- Laying shrub on washing conveyor. After shrub has been soaked in bales in the soaking tank, the bales are broken open and the shrub fed by hand onto a moving belt of meshed links, which carries it under water sprays to remove dirt clinging to the surface. J. J. Byrne. (Photo by W. D. Schoeb, BPI, Salinas, CA, March, 1943.)

434112 - Direct seeding guayule seed in field. Machine plants two rows at a time and shapes the ditches between the rows for irrigation. Salt River Valley, Arizona, 1944.

423986 - A guayule nursery in Salinas Valley, CA. Seedlings are approximately three months old. July, 1942.

- Salinas, CA, 1926. Digging nursery seedlings by hand prior to development of nursery digger.

426578 - Beet and bean cultivator attached to Case tractor, used for cultivating four rows of guayule plants soon after planting. Bakersfield District.

426580 - Heavy offset disc pulled by 40 h.p. eletrac tractor. Used in ground preparation. Operator is Mrs. Fred M. Parker.

426581 - Cultivator attachment on Ford tractor. Wasco Unit, Bakersfield District.

426583 - High pressure oil-spray machine being used on field near Salinas, CA.

426584 - Cultivator, attached to Ford tractor, cultivating four rows of guayule at Wasco Unit, Bakersfield District.

426586 - Four row cultivator; lister shaped shovels make shallow ditches between each two rows to facilitate irrigation. Wasco Unit, Pakersfield District.

426588 - Carryall scraper, six yard, being pulled by heavy Allis-Chalmers tractor.

Used in moving heavy dirt in preparing soil for irrigation prior to planting. Bakersfield District.

426589 - High pressure oil sprayer used in field plantings. Bakersfield District.

426590 - High pressure oil weed sprayer being used on newly planted guayule field near Salinas, CA.

426592 - Newly developed seed picking attachment used Summer, 1943, during seed harvest. Bakersfield District.

426593 - Cultivating newly planted guayule, Salinas District.

42659A - Four row cultivator operating at Wasco, Bakersfield District.

426595 - Cultivating guayule plants with 10" lister shovels. Bakersfield District.

426597 - Two offset discs operated by Mr. & Mrs. Fred M. Parker. Bakersfield District.

430237 - Cultivating guayule, Carter Ranch, near San Clemente, CA. Field was planted in February, 1944 and has had no irrigation.

430238 - Irrigating guayule plantation direct from well by means of portable irrigation pipe. San Mateo nursery plantation near San Clemente, CA.

430240 - Spot spraying morning glories with diesel oil. The oil kills the morning glory tops but does not injure the guayule plants. Dry land farming near Beaumont, CA.

430241 - Guayule planted on dry land in March, 1943. This field has never been irrigated. Beaumont, CA.

426019 - Section of laboratory maintained in connection with guayule growing program at Salinas, CA. Work pictured is in connection with soil tests. 6/43.

426020 - Testing rubber for resin content and purity in section of rubber laboratory maintained in connection with the guayule growing program at Salinas, CA.

- Laboratory rubber compounding mill. Crude rubber and the necessary chemicals are mixed here and the resulting mixture rolled out into a sheet for vulcanizing. Salinas, CA. March 5, 1944.

- Laboratory vulcanizing press. Crude rubber, compounded with sulfur and other ingredients, is here subjected to heat and pressure and vulcanized. The small sheets produced here are used as samples for testing physical properties of the product. Salinas, CA. March 5, 1944.

- Rubber tensile testing instrument. A sample of accurately measured cross-section is stretched to the breaking point, the instrument automatically recording the required data. Salinas, CA. March 5, 1944.

434119 - Rubber tensile testing instrument. A sample of accurately measured cross-section is stretched to the breaking point, the instrument automatically recording the required data. Salinas, CA. March 5, 1944.

426587 - Guayule seed as it is packed in metal drums. Indio Nursery, S. CA District.

- Guayule nursery. Seeds are sown in narrow bands in beds four feet wide. A density of 25 to 35 seedlings per square foot is sought. Plants are grown one season in the nursery, then transplanted to the field.

424594 - Baling guayule shrub for transportation to factory in Salinas Valley of CA. Shrub is delivered to baler by a buckrake propelled by a Caterpillar tractor. Wm. Shoev, Salinas copy, 1/15/43.

- Envelope of lettersize tracings of detailed soil survey. Arbuckle Area.

- Exp. 6. About August 15, 1943.

- Seeded June 14, 1943. July 10 about, 1943.

- Exp. 6. Picture September 1, 1943. Planted June 14 upper 1/2, lower 1/2 June 21, 1943. This picture on lower 1/2. Foreground-28" x 6"; center- 28; solid; Background-28" x 20"; extreme background-28" solid.

- Exp. Picture September 1.

- Planted August 5, 1943. Picture taken September 11, 1943. Transplants.

- Exp. 6. Picture September 1, 1943. Planted June 14, 1943.

- Exp. 29. Taken September 1. Seeded July, 9.

- July 25, 1943. Seeded June 14, 1943.

- About July 25, 1943. Direct seed exp. Bryan. Sown June 14, 1943.

- Exp. 29. Taken September. Seeded July 9, 1943.

- Exp. 6. Picture September 1. Seeded June 14, 1943. Spacing 12" foreground row 28". Center solid. Background 20" rows 28".

- Mariola (*Parthenium incanum*).

- Wm. G. Baxter photo. September, 1943.

- Plot No. C-60, W. W. Weeth, Owner, CA.Coalinga Plot, 11/21/43, W. A. Campbell.

- Guayule land classification map, Temecula Area.
- Figure 1. Regions suitable for guayule production in the U. S.
- Figure 1. Rubber percentage & rubber production by growing regions.
- Figure 4. Rubber percentage & production by growing regions.
- Figure 3. Average rubber hydrocarbon percentage and rubber yeild per acre.
- Index to detailed tract surveys, Arbuckle Area.
- U. S. D. A. Emergency Rubber Project. Outline map of Edwards Plateau Region.
- U. S. D. A. Emergency Rubber Project. Outline map , South portion of Plains Region, Texas.
- U. S. D. A. Emergency Rubber Project. New Mexico & Western Texas Physiographic Regions.
- Photo of Major Kelley and Congressman Ralph, November, 1942 at Alisal.
- Congressmen W. Robert Poage, D (Texas), John Phillips, R (CA), A. J. Johnson, R (Illinois), and Victor Wickersham, D (Oklahoma). Congressional investigating committee made tour of the project first part of April. They toured CA and Texas. W. R. Poage was chairman of the committee.

434140 - Emergency Rubber Project exhibit in the Southern CA Automobile Club lobby at Los Angeles. 1944. The exhibit remained in the lobby several months and attracted a great deal of attention.

- Photographs taken by Ernest Douglas, June, 1945.

433943 - Flow chart of guayule mill.

- Guayule rubber is pressed into 100-pound blocks ready for shipment to the tire factories.
- Milling of guayule.
- Workmen installing a large pebble mill in the pilot factory now being completed in Salinas by the Bur. of Agr. & Indust. Chemistry. 6/1/43.

425416 - Bale of guayule plants being put in trough of water for washing prior to processing. 3/27/43.

425466 - Guayule rubber "worms" after being thoroughly washed are spread out on pans preparatory to drying in the vacuum driers. Wm. D. Schoeb (BPI), March, 1943.

425462 - Washing guayule shrub preparatory to milling. After soaking in a tank the bales are broken and the shrub carried on a conveyor belt under water jets which wash off the soil and other impurities. Wm. D. Schoeb (BPI) March, 1943.

425467 - Guayule rubber comes from the vacuum driers in the form of thin spongy sheets. It is later pressed into 100-pound blocks. Wm. D. Schoeb (BPI) March, 1943.

- Guayule rubber produced from wild Texas shrub, boxed and ready for shipment. 1943.

425463 - Guayule shrub is first chopped into chips and the chips then ground through three sets of corrugated rollers such as these. Each succeeding set of rollers grinds the mass finer. Wm. D. Schoeb (BPI), March, 1943.

- 100-lb. block of rubber produced in Bakersfield guayule mill. Two such blocks are packed in a box for shipment. May, 1945.

- Shrub preparation section of Bakersfield guayule mill. The shrub is chopped and ground preparatory to going to pebble mills, May, 1945.

- Pebble mill section of Bakersfield guayule mill. Chopped and ground shrub is mixed with water and macerated in these tubes where the rubber is separated from the wood fibers. May, 1945.

425465 - The mass of ground guayule shrub and water from the pebble mill is pumped into a vat where the water-logged plant fiber sinks to the bottom and the rubber particles float to the surface, agglomerated in the form of "worms". Wm. D. Schoeb (BPI), March, 1943.

425469 - Guayule rubber is pressed into 100-pound blocks which are then packed two in a box for shipment to the manufacturers. Wm. D. Schoeb (BPI), March, 1943.

434118 - Laboratory vulcanizing press. Crude rubber, compounded with sulfur and other ingredients, is here subject to heat and pressure and vulcanized. The small sheets produced here are used as samples for testing physical properties of the product. Salinas, CA, March 5, 1944.

434123 - Scene inside BAIC pilot mill at Salinas. Machine shown is an attrition mill used experimentally to grind guayule shrub, 1944.

434124 - Scene inside BAIC guayule pilot mill at Salinas. 1944.

426020 - Section of rubber laboratory testing guayule rubber at Salinas, CA, June, 1943. The rubber is analyzed for rubber and resin content, in relation to various guayule research projects.

434122 - Scene inside BAIC guayule mill at Salinas. Equipment shown is a continuous dryer for rubber worms.

- "A" tank. Slurry from the pebble mills is discharged into this 20,000 gallon tank, where rubber and cork floats on the surface and the gas sinks to the bottom where it is removed by screw conveyor and elevated to the discharge room by means of an air lift. J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943).

- Slurry agitator. The slurry from the pebble mills is diluted with water and mixed in the slurry agitator to provide a uniform mixture for pumping to settling tanks and to wash off and deposit coarser grit particles picked up in the pebble mills. J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943.)

- Removing dried rubber from trays. When the rubber is dried it tends to stick together forming a spongy blanket. This blanket is removed from the trays and weighed for blocking in 100-lb. blocks. J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943.)

- Oliver dewaterer. This is not a part of the present factory process. It is merely an experimental unit set up to determine its adaptability for dewatering rubber worms. J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943).

- "A" tank for separating rubber from bagasse. The slurry from the pebble mills is pumped to this tank. The rubber and lighter cork particles rise to the surface and the bagasse sinks to the bottom of the tank. Floating material is skimmed from the tank and an auger-like device in the bottom of the tank pulls the bagasse out to a sump, from which it is lifted to the waste flume by means of an air lift. Floating material is washed on a vibrating screen from which it goes to the "pailas". J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943).

- Feeding chopped shrub to mill. After being washed, the shrub is chopped in a "lawn mower" type of cutter and discharged into the pit shown here. The worker shown in the picture feeds the shrub on the moving belt in the foreground at such a rate as to keep bucket of measuring conveyor filled.

J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943.)

- Skimmer for "C" tank. The rubber and cork from "A" tank is carried to large pressure cells where it is subjected to heat and pressure. This process waterlogs the cork. The mixture is then discharged into another settling tank, "B" tank, where the waterlogged cork sinks and the practically dirt-free rubber floats. There is a little dirt, however, in the skimmings from "B" tank, so the mass is passed through a small pebble mill and washed with hot water after it is discharged into "C" tank pictured here. The scoop-like skimmer shown here is used to skim the clean rubber from the top of the tank. J. J. J. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943.)

- Hydraulic worm dewaterer. This dewaterer was installed at the factory during the 1943 campaign. The worms are pumped into a square, perforated bucket placed under the plunger of the hydraulic press. The press is actuated by a foot lever. Adjustments are provided for controlling the amount of pressure to be applied to the worms. J. J. Byrne. (Photo by Wm. D. Schoeb, BPI, Salinas, CA, March, 1943.)

434125 - Scene inside BAIC guayule mill at Salinas, CA, 1944.

434120 - Laboratory rubber compounding mill. Crude rubber and the necessary chemicals are mixed here and the resulting mixture rolled out into a sheet for vulcanizing. Salinas, CA, March 5, 1944.

- View of rubber dryer in Bakersfield guayule mill. Rubber worms are spread on a moving belt, which travels through dryer. Hot air is forced up through the perforated belt by blowers.

433944 - Pebble mills in a guayule rubber extraction plant. It is in these revolving tubes, partly filled with pebbles, that the rubber is separated from the plant fibers. Salinas, CA.

425468 - Guayule rubber being pressed into 100-pound blocks for shipment to manufacturers. Wm D. Schoeb (BPI), March, 1943.

- Skimmer for "C" tank.

- Water-shrub ratio control.

- Slurry agitator.

- Feeding chopped shrub to mill.

- Feeding baled shrub to soaking tank.

Photographs included in Results of 1942 Seeding of Kok-saghyz in Lake States Forest Nurseries by J. H. Stoeckeler, Associate Silviculturist, February 6, 1943:

- Hand seeding of kok-saghyz with Planet Jr. 3A seeder. Lydick Nursery, June 1, 1942.
- Multiple-row Planet Jr. seeder best adapted to large scale seeding program. Lydick Nursery, June 1, 1942.
- Young stand of kok-saghyz seeded late May, 1942 at Cass Lake Nursery. July 10, 1942.
- Kok-saghyz toward end of growing season at Cass Lake Nursery. Seeded late May, 1942. August 5, 1942.
- Fertility and thinning experiment in Lydick Nursery showed heaviest response in root production from nitrogen, and in seed production from lime and potash. Seeded June 3, 1942. August 4, 1942.
- Single plant of kok-saghyz in late summer. August 30, 1942.
- Crew of women weeders at left. Push cultivator at right. Cass Lake Nursery. July 1, 1942.
- A McCormick Deering Model A Farmall was found satisfactory in cultivation of the 16-inch rows. July 10, 1942.
- Applying liquid fertilizer in midsummer. July 28, 1942.
- Stages of flower development of kok-saghyz. Picking was limited to the three stages at right. July 28, 1942.
- Crew of girls picking kok-saghyz. September, 1942.
- Front view of 2 row mechanical seed picker, September, 1942.
- Side view of 2 row mechanical seed picker. September, 1942.
- Side view of 1 row seed picker. September, 1942.

- Close-up of kok-saghyz at Cass Lake in late summer. Large plant at left center is low-rubber type. September, 1942.
- Seed heads were placed in cone trays to open up before extraction. September, 1942.
- Since no beet lifters were available, it was necessary to plow out the individual rows of roots and pick them up by hand. Cass Lake Nursery, Minn. November 1, 1942.

Memo regarding construction of a 1-row hand-operated seed picker included these:

- Figure 1. Front view of 1-row dandelion seed picker, showing brush unit and V-belt drive to left wheel to drive the revolving beater brush mounted in the metal hood. Flexible metal tubing from hood runs to suction end of blower. Blower is on lefthand side of machine. Both driving wheels are connected with single shaft. Developed by Lake States Forest Experiment Station, University Farm, St. Paul, Minn. September, 1942.
- Figure 2. Side view of 1-row, manually-operated seed picker for kok-saghyz, showing V-belt drive from right wheel to pulley on duster unit, and showing the metal hood housing the beater brushes. Chassis is part of a 1-man push cultivator. Developed by Lake States Forest Experiment Station, University Farm, St. Paul, Minn. September, 1942.

Cooperator's report on test planting of kok-saghyz included these:

- Figure 4. View of experimental seedings of kok-saghyz involving three one-twentieth-acre plots with 16 five foot long counting plots run diagonally across each plot. Seeded May 21, May 27, and June 8, 1942, respectively. Photo July 10, 1942. Lydick Nursery, Cass Lake, Minn.
- Figure 5. View of same three one-twentieth-acre plots shown in Figure 4 but about a month later. Photo August 4, 1942.
- Figure 6. Looking north at experimental plots involving 10 different fertilizers and also thinning to a 2-inch spacing. Placed in the verinalized dry plot on July 24, 1942. Seeded June 8, 1942 at rate of 2,000 grams of seed per acre. There are 4 replications of 10 plots each 24 feet long. North half of each plot is thinned very accurately to a 2-inch spacing. Separator boards between plots are sunk in soil to confine fertilizers to plot. Photo August 4, 1942. Lydick Nursery, Cass Lake, Minn.

Approximately 100 prints of prints of various stages of guayule culture.
unidentified.

RECENTLY HAVING CONDUCTED A SURVEY OF THE
WATERS OF THE GULF COAST FROM THE TEXAS BORDER
TO PANAMA CITY, FLORIDA, IN JUNE 1902,

I HEREBY CERTIFY THAT THE FOLLOWING STATEMENT

IS TRUE AND ACCURATE:

THE GREAT PITCHER, THOUGHT
TO BE THE MARSHAL'S
SACRED CUP, WHICH WAS
EXHIBITED IN LONDON
IN 1851, IS IN
THE MUSEUM OF THE
BRITISH MUSEUM.

REPRODUCED FROM PICTURES
WHICH I HAVE TAKEN OR OBTAINED

COLLECTIVE INDEX
TO THE LINE-PICTURE
OF THE GREAT
PITCHER.

THESE PLATES SHOWING
THE GREAT PITCHER.

PLATE I. (IMPLYING 10)
THE GREAT PITCHER, 18000 FT.
AT FORT B. 1902 AT
MIDNIGHT AT 10 P.M.
WAS VERY ACCURATE.
THIS PLATE SHOWS THE
GREAT PITCHER IN
A DARK COLOR.

424731 - Knocking dirt off guayule shrub roots and windrowing shrubs. Arguello field near Salinas, California. S. W. McBirney, BACE, 1-7.

424728 - Plowing out guayule shrub preparatory to extraction of rubber. Arguello field near Salinas, California, S.W. McBirney, BACE, 1-7-43.

424729 - Plowing out guayule shrub ^a preparatory to extraction of rubber. Arguello Field near Salinas, California. S.W. McBirney, BACE, 1-7-43.

424730 - Guayule shrub plow as developed at beginning of harvest. Arguello field near Salinas, California. S.W. McBirney BACE, 1-7--43.

424576 - Baling guayule shrubs with Monarch Jr. upright baler. Joe Barba's place 12 miles north of Salinas, California.

424573 - Plowing out one row of mature guayule shrubs with experimental single standard U-type plows. Arguello Field near Salinas, California.

424409 - Guayule shrub from Arguello Field, near Salinas, California. Men piling the bales which weigh around 200 pounds each.

424408 - Guayule shrub in Arguello Field, near Salinas, Cal. Piles of baled shrub awaiting transport to rubber extractory. Carl A. Taylor 1-14-43.

424407 - Guayule shrub in Arguello Field, near Salinas, Cal. Buckrake used to deliver nearby shrub to baler. Carl A. Taylor 1-14-43.

424406 - Guayule shrub in Arguello Field, near Salinas, Cal., being fed into baler. Carl A. Taylor 1-14-43.

424405 - Guayule shrub in Arguello Field, near Salinas, Cal., being fed into baler. Carl A. Taylor 1-14-43.

No number- Guayule shrub plows of double and single standard U-type being developed by ~~Fyrr~~ of I.H.C. S.W. McBirney, 11/5/42.

No number- Views of indicator plot on experiment station at Chillicothe, Texas. By H.L. Lobenstein, September, 1944.

424404 - Guayule shrub in Arguello Field near Salinas Cal., dug and stacked ready for baling. Carl A. Taylor 1-14-43.

424581 - Typical guayule plants grown with and without irrigation; during the first year after transplanting. Actually about 8 months after transplanting of 1-0 stock. Taken from Albert Hansan field and mounted. Carl A. Taylor 12/28/42.

418486 - General View of Salinas guayule factory. Intercontinental Rubber Co. 1/26/31.

425414 - Piles and bales of guayule plants. Baler in foreground in rubber mill. Taken by Reed N. Haythorn, 3/27/43. Salinas California.

419923 - Progress record of construction of labor camp for housing workers. Taken second day after construction contract was let. General view, including entrance road grading, construction office and batter-boards for location of barracks. Carl A. Taylor 3/15/42.

419922 - Progress record of construction of labor camp for housing workers. Second day after construction contract was let. Grading and batter-boards shown. Carl A. Taylor 3/13/42.

419921 - Progress record series showing construction of labor camp for housing workers. Well for water supply being put down. Taken two days after construction contract was let. East of Salinas. Carl A. Taylor 3/13/42.

419968 - Nursery workers at lunch in the field. Carl A. Taylor 4/30/42.

419967 - Nursery workers at lunch in the field. Hot soup and coffee served. Carl A. Taylor, 4/30/42.

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418481 - Single guayule plant 5 years old. Intercontinental Rubber Co.

418473 - Individual field guayule plant 3 mos. old. Intercontinental Rubber Co.

No number - Temp Sal 5 Guayule shrubs dug by hand on left and with experimental shrub plow on right. Alisal Nursery near Salinas, Cal. R.E.Jazek 12/12/42.

no number - Guayule specimen. Intercontinental Rubber Co.

423977 - Mature guayule shrub from field in the Salinas Valley of California acquired from the Intercontinental Rubber Co.

419913 - Interior view of grading room, where nursery seedlings are graded for size from moving endless belt. Carl A. Taylor 3/8/42.

426124 - Land preparation at Indio Nursery, Bell West Unit. California. February, 1943.

425636 - Land Leveling at Lee Nursery, Bakersfield, Calif., March 1943, Paul H. Roberts photo.

424202 - The bed marker marks out the lanes for the seeder to follow in sowing the guayule seed. Carlsbad Nursery, Carlsbad, Cal. W.G. Baxter 11/30/42.

424201 - The land leveling machine acts as a flat iron in smoothing out the wrinkles in the seed bed surface, in preparation for sowing guayule seed. Carlsbad Nursery, E.R.P., Carlsbad, Cal. W.G.Baxter, 11/30/42.

424200 - The surface soil is firmed with a packer in preparing the seed bed for the guayule seed, Carlsbad Nursery, E.R.P., Carlsbad, Cal. W.G.Baxter, 11/30/42.

424198 - Using lister to assist in breaking up the clods in the sub - surface area, in preparing the seed bed. E.R.P., Indio, Cal. W.G.Baxter, 12/3/42.

424197 - A double disc prepares the soil for the guayule seed bed. Emergency Rubber Project, Indio, Cal. W.G.Baxter 12/3/43.

- 424196 - Loosening soil with chisel in preparing seed bed for guayule seed. Indio Nursery, Emergency Rubber Project, Indio, California. W.G.Baxter, 12/3/42.
- 418460 - Subsoiler working in guayule nursery beds. Intercontinental Rubber Co.
- 419940 - Side closeup view of nursery bed leveler, designed and made on project. Carl A. Taylor 4/26/42.
- 419939 - Rear view of nursery bed leveler and roller. Carl A. Taylor, 4/26/42.
- 419938 - Nursery bed leveler, underslung from small tractor, and followed by bed roller is last stage of ground preparation for sowing. Carl A. Taylor, 4/26/42.
- 419937 - Rototiller in action, giving final mulching of soil for sowing. Carl A. Taylor 4/26/42.
- 419936 - Eversman land leveler which is one of the items of equipment used in preparing nursery ground for sowing and irrigation. Carl A. Taylor, 4/26/42.
- 418459 - Disc and ringroll used in preparation of guayule nursery beds. Intercontinental Rubber Co.
- 422904 - Guayule nursery on Bell Ranch, Indio, Calif. Grade stakes for leveling dunes drifted in from field leveled for irrigation. Carl A. Taylor, 9/24/42.
- 422903 - Guayule nursery on Bell Ranch, Indio, Calif. Sand dunes drifted in from field leveled for irrigation earlier in the summer. Carl A. Taylor, 9/24/42.
- 422902 - Guayula nursery on Bell Ranch, Indio, Calif. Sand drifted in from field leveled for irrigation in the summer. Carl A. Taylor 9/24/42.
- 422897 - Nursery on Bell Ranch, Indio, Calif. One of the fields northeast of ranch house. Carl A. Taylor, 9/24/42.
- 419946 - Distributing nursery track-boards for laying. This heavier type trailer is used for distribution of boards from stockpiles, too. Carl A. Taylor, 4/26/42.

419945 - Distributing nursery track-boards for laying. Bedtracks at left are installed for use. Carl A. Taylor, 4/26/42.

419944 - Piles of nursery bed track-boards ready for distribution and installation. Carl A. Taylor, 4/26/42.

419920 - Construction of nursery bed-tracks, commonly called duckboards, on which special nursery equipment rolls in sowing beds and tending seedlings. Expansion of nursery facilities required 956 miles of duckboards in spring of 1942. Carl A. Taylor, 3/12/42.

419943 - Finishing a line of slat fence between sections of nursery beds, using track-tractor to stretch it tight and nailing fence to sprinkler line posts. Carl A. Taylor, 4/26/42.

419942 - Starting to install slat fencing between sections of nursery beds, for wind protection. Carl A. Taylor, 4/26/42.

419941 - Nursery section on which primary ground preparation is completed and slat fencing ready to be installed for wind protection. Sprinkler lines were in place during primary ground preparation. Carl A. Taylor, 4/26/42.

423985 - Part of a fleet of tractors used in the guayule nurseries in the Salinas Valley of California.

419937 - Rototiller in action, Giving final mulching of soil for sowing. Carl A. Taylor, 4/26/42.

419966 - Nursery workers at lunch in the field. Carl A. Taylor, 4/30/42.

424196 - Loosening soil with chisel in preparing seed bed for guayule seed. Indio Nursery, Emergency Rubber Project, Indio, California. W.G. Baxter, 12/3/42.

426582 - Ten foot cultipacker, attached to cletrac tractor. Mission Nursery, Southern California District, April 1943.

No number - Lettuce row seeding of June 20, 1942. Photo taken May, 1943 Quail Creek Nursery, Salinas.

425945 - Scene in the Salinas Nursery, Salinas, California. WM.D.Schoeb,
July, 1942.

419950 - Special seeding machine on the project for nursery sowing. Lever
at extreme right is for auxilliary steering and levers by operator
control feed of seed and cover. Carl A. Taylor, 4/26/42.

419972 - Exterior view of sand bunker and mixing equipment. Specially
dried sand is mixed with very small quantities of water in pre-
paration for use as nursery coversand. Carl A. Taylor, 5/9/42.

No number - Nursery seeding machine in operation in the Salinas Valley,
summer of 1943. Picture taken by Mr. Schoeb.

426118 - Cultivating guayule that was planted March 27, 1943, Indio Nursery,
Bell Easy Unit, Calif. Block 57.

434143 - Cleaning guayule seed in the Circle Ranch seed cleaning plant
near Bakersfield, California. 1943.

423982 - Guayule generally produces a good seed crop if growing conditions
are favorable. Two-year old plants in the Salinas Valley of
California.

422893 - About 5,000 lbs. of treated seed being mixed for uniformity.
Carl A. Taylor, 9/14/42.

423986 - View of one of the guayule nurseries in the Salinas Valley of
California. The plants are seedlings from the seed planted in
April 1942.

434147 - View of a California guayule nursery near Indio, California. 1944.

425401 - E.R.P. nursery taken from tower at Indio, Calif. on 4/2/43 by Reed
N. Haythorne.

424208 - Mission Nursery as viewed from Mission Knoll which is located just
east of the nursery. Mission Nursery, Oceanside, Calif. W.G. Baxter,
11/26/42.

425400 - E.R.P. nursery taken from tower at Indio, Calif. by Reed N.
Haythorne on 4/2/43.

422899 - Water tower in middle distance feeds irrigation to the field in the distance. Taken in Bell Ranch at Indio, Cal. now used as a guayule nursery. Carl A. Taylor, 9/24/42.

422898 - View of field adjoining the desert on Bell Ranch, Indio, Cal., now being leased as guayule nursery. Carl A. Taylor, 9/24/42.

418465 - Individual guayule beds 5 mos. old after sowing. Inter continental Rubber Co.

423984 - Field of one of the Project's nurseries in Salinas Valley, California. The plants are seedlings from the seed planted in April.

419899 - Project's first day of official operation. Nurserymen Moffet and Klein discuss the work with the crew foremen. Beds of one year old guayule seedling at left. Carl A. Taylor, 3/5/42.

424204 - At each end of the nursery beds a truck load of sand is ready to replenish the sand box on the seeder. This sand is used to cover the guayule seed. Carlsbad Nursery, Carlsbad, Cal. W.G. Baxter, 11/30/42.

424203 - A 3/8 yard tractor mounted shovel is used to fill the trucks with sand with which the presprouted guayule seed is to be covered. The sand is located in a stock pile adjacent to the nursery. Carlsbad Nursery, Carlsbad, Cal. W.G. Baxter, 11/30/42.

419973 - Mixer and loading equipment for nursery sand, which is used at the rate of 150 tons a day. Carl A. Taylor, 5/9/42.

419972 - Exterior view of sand bunker and mixing equipment. Specially dried sand is mixed with very small quantities of water in preparation for use as nursery coversand. Carl A. Taylor, 5/9/42.

419971 - Interior of sand bunkers where nursery sand is stored until used. At left is wheelbarrow dumping as unloaded from cars. 150 tons a day is rate of use. Carl A. Taylor, 5/9/42.

419970 - Interior of canvas-covered sand bunkers, where specially dried sand is stored until used for covering seeding in nurseries. Carl A. Taylor, 5/9/42.

418462 - Guayule nursery seeder; old style broadcasting. Used prior to 1940. Intercontinental Rubber Co.

- 419951 - Rear quarter view of nursery seeding machine, showing attachment to small tractor, use of bed-tracks, and flow of sand. Carl A. Taylor, 4/26/42.
- 419947 - Beginning of sowing operation in nurseries. Seeding machine is receiving hopperful of cover sand. Carl A. Taylor, 4/26/42.
- 425633 - Nursery sowing, Caliente Unit, Bakersfield, Cal. Mr. Makeev of Russian Rubber Commission standing in machine in center. 5/6/43. Paul H. Roberts photo.
- 425626 - Nursery sowing, Caliente Unit, Bakersfield, Cal. Mr Litvin of Russian Rubber Commission. 5/6/43, Paul H. Roberts photo.
- 425625 - Nursery sowing, Caliente Unit, Bakersfield, Cal. Mr. Makeev of Russian Rubber Commission in center. 5/6/43, Paul H. Roberts photo.
- 424206 - Seeding proceeds rapidly between the lines of the overhead sprinkling system. Carlsbad Nursery, Carlsbad, Cal. W.G.Baxter, 11/30/42.
- 419950 - Special seeding machine made on the project for nursery sowing. Lever at extreme right is for auxilliary steering, and levers by operator control feed of seed and sand cover. Carl A.Taylor, 4/26/42.
- 419949 - Closeup of special seeding machine made on project. Right to left: banded roller which leaves a depressed groove in soil, seed hopper with driven feed, packing roller(in shadow), Drive gears for rubber delivery belts, and hopper for cover sand and with hinged chute to catch spill of shovels on truck. Carl A. Taylor, 4/26/42.
- 419946 - Beginning of the sowing operation in nursery. Seeding machine is recieving hopperful of sand. Operatoris checking condition of seed in front hopper. Carl A. Taylor, 4/26/42.
- 418461 - Top view of nursery seeding machine -new style, row seeding. Intercontinental Rubber Co. (Machine developed in 1940.)
- 434102 - Baling guayule shrub with a pickup baler. This shrub is unused seedlings grown in the Carlsbad Nursery in California. The seedlings are dug with a potato digger and windrowed with a side-delivery rake. 1/11/45.
- 434146 - Women workers at lunch in a guayule nursery in the Salinas Valley, California. 1943.

434103 - Using side-delivery rake to windrow guayule seedlings in the Carlsbad Nursery, California. These seedlings were not used for transplanting and were harvested for rubber. 1/11/45.

No number - Baled guayule harvested from the Carlsbad Nursery, March, 1945.

434104 - Bale loader designed to load guayule bales from the ground into a truck. The bales weigh about 200 lbs. this shrub is guayule seedlings not used for transplanting and harvested for rubber in the Indio Nursery, California. 10/29/44.

434105 - Baling guayule shrub with a pickup baler. This shrub is seedlings not used for transplanting and harvested for rubber in the Indio Nursery, California, 1/11/45.

434106 - Using a standard potato digger to harvest seedling guayule plants in the Carlsbad Nursery, California. These plants were not used for transplanting purposes and were harvested for rubber. A side-delivery rake windrows the shrub behind the digger and it is then baled with a pickup baler. 1/11/45.

419895 - Project's first day of official operation. Men with tractor-trailer take up nursery bed tracks just prior to undercutting seedlings for removal. Carl A. Taylor, 3/5/42.

419894 - Mechanic repairing seedling clipper, one of specially designed equipment taken over from Am. Rubber Co., Carl A. Taylor, 3/5/42.

418469 - Guayule seedlings packed in boxes ready for transplanting. Intercontinental Rubber Co. 3/10/30

423989 - Removing guayule seedlings from a nursery bed at one of the Salinas, California, nurseries. The seedlings are packed in crates and shipped to the field for transplanting.

423987 - Removing seedlings from one of the nurseries in the Valley of California for shipment to the field where they will be transplanted.

419898 - Project's first day of official operation. Wet burlap covered box in which seedlings are placed. Foreground bed from which seedlings have been removed. Carl A. Taylor, 3/5/42.

419897 - Project's first day of official operation. Men removing and packing in boxes guayule seedlings for transplanting in field. Carl A. Taylor, 3/5/42.

419896 - Project's first day of official operation. Machine undercutting nursery seedlings (right). Men at left are removing seedlings previously dug. Carl A. Taylor, 3/5/42.

418468 - Closeup of digger loosening guayule plants at beginning of the bed. Intercontinental Rubber Co.

425413 - Oil spray machine used for killing weeds. Taken at Bakersfield, Cal., by Reed N. Haythorne, 3/29/43.

425412 - Closeup of spray nozzles on oil spray machine, used for killing weeds. Taken at Bakersfield, Cal., by Reed N. Haythorne, 3/29/43.

425411 - Oil spray machine for killing weeds. Taken at Bakersfield, Cal., by Reed N. Haythorne, 3/29/43.

425410 - Oil spray machine for killing weeds. Taken at Bakersfield, Ca., by Reed N. Haythorne, 3/29/43.

425409 - Oil spray machine for killing weeds. Taken by Reed N. Haythorne, 3/29/43.

425187 - Weed control demonstration in guayule field. Plot at left sprayed 2/17/43 with 200 gallons per acre of mixture of 3 parts water to 1 part "stove-tops" oil. Casein spreader added to mixture at rate of 1 pound per 100 gallons. Photo taken 4/9/43. Plants are one year old (planted April 1942). Carl Taylor.

425186 - Weed control demonstration in guayule field. Plot at left sprayed 2/17/43 with 200 gallons per acre of mixture of 3 parts water to 1 part "Stove-tops" oil. Casein spreader added to mixture at rate of 1 pound per 100 gallons. Plants are one year old (planted April, 1942). Carl Taylor, 4/9/43.

425185 - Weed control demonstration in guayule field. Plot at left sprayed 2/17/43 with 200 gallons per acre of mixture of 3 parts water to 1 part "Stove-tops" Oil. Casein spreader added to mixture at rate of 1 pound per 100 gallons. Plants are one year old (planted April. 1942). Carl Taylor, 4/9/43.

426985 - Method employed by guayule project in siphoning water from ditches to guayule rows. This replaces the ordinary but more time consuming operations of making openings in the ditch bank at each row. The man is shown filling a siphon with water preparatory to starting it to flowing. Zimmerman Ranch, Kern County, California, 10/22/43.

426985 - Method employed is siphoning water from ditches to guayule rows. Zimmerman Ranch, Kern County, Cal., W.G. Baxter, 9/11/43.

424586 - Irrigated guayule during second year after planting in Spence field southeast of Salinas, Cal. See 424584 for contrast with unirrigated plants in same field. Carl Taylor, 12/28/42.

424583 - Irrigated guayule during first year after planting in Mary Hanson field southeast of Salinas, Cal. Camera point was in center of land separating the irrigated and unirrigated field shown. Carl Taylor, 12/28/42.

424584 - Unirrigated guayule during second year after planting in Spence field southeast of Salinas, Cal. See 424586 for contrast with irrigated plants in same field. Carl Taylor, 12/28/42.

424585 - Unirrigated guayule during fist year after planting in Mary Hanson field southeast of Salinas, Cal. Camera point was in center of land seperating the irrigated and unirrigated fields shown. Carl Taylor, 12/28/42.

423991 - Irrigated ~~4~~ guayule field in the Salinas Valley of California. The crop is grown on either irrigated or dry land, but like other plant makes growth where ample water is provided.

- Hammond Indicator Plot near Dos Palos, Calif. 11/21/43. W.A.Campbell.

- Ogle Plot. 11/23/43. W.A.Campbell.

- Indicator Plot, Indio, Cal. 12/15/44. W.A.Campbell.

- Ogle 2 acre plot. 96% surival. 8/17/43.

- Indicator plot C-55.

- Dos Palos plot, note cloddy nature of soil, Panoche Silty clay. 5/27/42. W.A.Campbell.

- Dos Palos plot General view showing lumpy nature of soil. 5/27/42.

- Dos Palos plot. Est. March 24 and 25, 1942. Photo May 27, 1942.

- Indio plot. 1/13/44. W.A.Campbell.

424199 - The lister ridges are smoothed down by means of the double disc which further breaks down the clods in preparing the ~~seed~~ ^{soil} for guayule seed. E.R.P., Indio Nursery, California. W.G.Baxter, 12/3/42.

- Indicator plot, Alisal Nursery, Good contrast between irrigated and non-irrigated part. 10/15/42. W.A.Campbell.

- Plot at Salinas. 4/3/45.

- Indicator plots -C51, Dos Palas, Cal. 1/20/45. W.A.Campbell.

- No descriptions.

- Guayule plants growing on Valley Center ranch near Escondido, Cal. Planted about 1914 and photographed June 7, 1922.

- Guayule plants growing on Valley Center ranch near Escondido, Cal. Planted about 1914 and photographed July, 1927.

- Guayule plants growing on Valley Center ranch near Escondido, Cal. Planted about 1914 and photographed July, 1927.

- Typical guayule country in Old Mexico. 1929.

- Typical guayule country in Old Mexico. Mexicans loading shrub on a burro. 1929.

- Guayule plants growing on Valley Center ranch near Escondido, Cal. Planted about 1914 and photographed 8/31/33.

418472 - Guayule plants in field 3 mos. old. Intercontinental Rubber Co. 8/9/41.

- Ringhoff field, planted in 1931 and photographed that same year. West side of Salinas Natividad and Old San Juan Roads..Field is directly east of John D. Nunes ranch.

- 1926 plantings at Salinas from Valley Center seed.

- Giffen Ranch, 4 acre plot near Mendota, Cal. 11/21/43.W.A.Campbell.

424404 - Guayule shrub in Arguello Field near Salinas, Calif., dug and stacked ready for baling. Carl A. Taylor, 1/14/43.

- Giffin plot, 8/19/43.

418480 - Arguello field. 10 year old guayule plants. Intercontinental Rubber Co. 8/9/41.

- Banning plot, general view 1 month after planting, 5/15/42, W.A.Campbell

- Banning plot, 5/15/42, W.A.Campbell.

- Indicator planting. General view of Wolcott plot near Willows, Cal. On Columbia sandy loam. Planted 4/2/42. Photo 7/8/42. W.A.Campbell.

- Wolcott plot, non irrigated portion of planting. 8/17/43.

- Indicator plot C-6, Scofield near Arbuckle, California. 1/24/45. W.A.Campbell.

- Gravel plots, Baldson Ranch, Arbuckle, California. 1/24/45. W.A.Campbell..

- Planting in Baldson ranch near Arbuckle, Cal. 1/24/45. W.A.Campbell.

- Old nursery planting and thinning plots, Davis, Cal. 1/23/45. W.A.Campbell.

- Indicator plot C-10 Davis, California. 1/28/45. W.A.Campbell.

- David Variety plot, 11/20/43, W.A.Campbell.

- Closeup of plants on Davis plot planted 4/25/42. Photo 7/8/42. W.A.Campbell.

- Weed control on Wolcott plot, 1942.

- Root rot area in Wolcott plot, 1942.

- Wolcott plot, 11/18/43, W.A.Campbell.

- C-5 Wolcott plot, Part of plot which received one irrigation in July 1942. Note the Very poor stand. 11/18/43. W.A.Campbell.
 - Wolcott plot, 11/18/43, W.A.Campbell.
 - Continental, Ariz., field plants taken end of 1st year 1921.(one print only - negative not available).
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 - General view of field plants, Continental, Ariz. 4 year old plantings. 1921
- 902 - Comparison in bean growing as between land that for years had been rotated to beans and barley, and land similarly cropped until 1927, when guayule was planted and left for 7 years. Photo taken of first crop planted after removal of guayule in 1934. The poorer crop on Neilsen field is separated from guayule field by a 90-ft road. Neilsen's field was planted 10 days prior to planting on company field. Compare with 901.
- 901 - Comparison in bean growing between land that for years had been rotated beans and barley, and land similarly cropped until 1927, when guayule was planted and left for 7 years. Photo taken of first crop planted after removal of guayule in 1934. The poorer crop on Neilsen field is separated from guayule field by a 90-ft road. Neilsen's field was planted 10 days prior to planting on company field. Compare to 902.
- Original Salinas station on Duncan-McKinnon ranch, now owned by Mr. Jarvis. In SW corner at junction of HWY 101 and Castroville road. Planted 1922 - photographed in 1924.
 - Jack's field, planted in 1929, and photographed that same year. Portion of a 750 - acre field of guayule. East side of Hwy. 101 the first field immediately north of Chular.
 - 1941 planting in Spence field, on south side of the old Stage Coach Road, midway between Hwy. 101 and Alisal rd.
 - Spence field, on south side of old Stage Coach Rd., midway between Hwy. 101 and Alisal Rd. Greenhouse special plants transplanted by hand 6/4/41. Photo 8/9/41.
 - Spence field, on south side of old Stage Coach Rd. midway between Hwy. 101 and Alisal Rd. Plot A, looking northeast planted May 1, 1941 and photographed Aug. 9, 1941.

- Banning plot, 1/13/44. W.A.Campbell.
- Banning plot, Condition of plants 1 month after planting. 5/15/42.
- Plot C - 75.
- Indicator plot, Bard, Calif., 6/28/44, W.A.Campbell.
- Indicator plot C-76, Bard, Calif., 6/28/44, W.A.Campbell.
- Graham plot Willows, Calif., Closeup of plants in irrigated part, Plants damaged by grasshoppers. Planted 3/28/42. Photo 7/8/42. W.A.Campbell.

425429 - Trough dipper scooping guayule rubber from large vat, Salinas Cal.
Taken by Reed N. Haythorne, 3/25/43.

425435 - Black guayule rubber being placed in compressor Salinas, Calif.
Taken Reed N. Haythorne, 3/25/43.

422601 - Project technicians making seedling counts in the guayule nurseries at Salinas, Calif. These counts, made of minute random samples throughout the nurseries, are designed to keep check on the number of seedlings which will be available for transplanting. Chamber of Commerce. 1942.

419867 - Rear view of special cultivator developed for cultivating 4" bands of soil between rows of guayule plants in the nursery beds. Carl A. Taylor, 6/20/42.

419868 - Side view of special cultivator developed for cultivating the 4" bands of soil between the rows of guayule plants in the nursery beds. Carl A. Taylor, 6/20/42.

423983 - Weeding guayule nursery beds in Salinas, Cal., nursery. The plants are seedlings from seed planted in April.

419871 - Women and girls weeding nursery beds. The carts are used to relieve strain of leaning out over center of the beds. Trucks in background are those used to haul workers from nearby towns. Carl A. Taylor, 6/20/42.

426119 - Nursery bed oil-sprayer in operation. Indio Nursery, Bell East Unit, Block 57, Section 7. Five to one emulsion. California. April, 1943.

426117 - Oil-sprayer in operation. Nursery bed type. Indio Nursery, Bell East Unit. Block 59, Section 3. Calif. Five to one emulsion. April 1943.

426125 - Operators shown are women. Indio Nursery, Calif. February, 1943.

411074 - Nursery toward end of first weeding. Young men cleaning up the beds of remaining weeds. Carl A. Taylor. 6/27/42.

419954 - Irrigating 5 minutes after these beds were sown. Hand Sprinkling of ends to obtain wetting of windward ends of beds. Carl A. Taylor. 4/26/42.

425634 - Army wives operating tractor and nursery cultivator, Bell Ranch Nursery, Indio, Calif. 4/21/43. Paul H. Roberts photo.

426118 - Cultivating guayule at Indio Nursery, Bell East Unit. Block 57. Calif. April, 1943.

419869 - Special device for applying liquid fertilizer to soil between the rows of guayule plants in nursery beds. Carl A. Taylor 6/20/42.

423988 - Weeding guayule nursery beds at one of the Salinas Valley nurseries. The plants are seedlings grown from seed planted in April.

426123 - Effects of oil-spray three weeks after oil-spray. Emulsion - 1 to 1 up to 4 to 1. Indio Nursery, Whittier Unit., California. January, 1943.

426122 - Effects of oil-spray three weeks after treatment. Bare spaces between are treated sections. Emulsion - 1 to 1 up to 4 to 1. Indio Nursery, Whittier Unit, Calif. January, 1943.

426121 - Effects of oil-spray three weeks after treatment. Bare spaces between weeds are treated sections. Emulsion - 1 to 1 up to 4 to 1. Indio Nursery, Whittier Unit, Calif. January, 1943.

426120 - Results of oil-spraying three days after treatment. Indio Nursery, Bell East Unit.. Block 57, Section 7. Calif. April 1943.

425635 - Weed spraying at Bell Ranch Nursery, Indio, Calif. Paul H. Roberts photo, 4/21/43.

422605 - Weeding guayule beds in the Salinas Nurseries. During the peak of the Weeding season more than 3,000 workers, largely women and girls, were recruited to clean out the weeds. Chamber of Commerce - 1942.

421073 - Men weeders in guayule nurseries. Carl A. Taylor, 6/27/42.

421071 - High school boys weeding guayule nurseries. Taken at Alisal Nursery near Salinas, Calif. Carl A. Taylor, 6/27/42.

421070 - Local ranch hands help with weeding guayule nurseries. Alisal Nursery, Salinas, Calif. Carl A. Taylor, 6/27/42.

421072 - Young men weeding the guayule nurseries. Carl Taylor, 6/27/42.

419874 - Young women employed in weeding the nursery beds. The forewoman standing at left is checking the weeders boxes to see that no guayule plants are pulled with the weeds. Carl Taylor, 6/20/42.

419875 - Young matrons weeding guayule nursery beds. Some of them employ gardeners to care for their lawns while they tend guayules as a patriotic duty. Carl Taylor. 6/20/42.

419876 - Closeup of Mexican girls weeding guayule nursery beds. Carl Taylor. 6/20/42.

419877 - Women weeders at Alisal Nursery. This weeder finds the "belly-buster" technique more comfortable. Carl Taylor. 6/20/42.

419873 - Some of the Mexican girls employed in weeding the nursery beds. The Mexican workers are particularly adept at this and other nursery work. Carl Taylor, 6/20/42.

419872 - Girl Weeders at Alisal Nursery. The two in foreground are deaf mutes who found that the occupation definitely hampers "manual conversation". Carl Taylor, 6/20/42.

- Coalinga test plot, 8/18/42.
- Coalinga plot, Est March 21 and 22, 1942. Photo May 28, 1942. W.A.C.
- Coalimga test plot, Calif., W.A.Campbell. 8/18/42.
- Coalinga plot. 11/21/43. W.A.Campbell.
- Coalinga plot. 11/21/43. W.A.Campbell.
- Indicator plot Coalinga, Calif. 6/12/43. W.A.Campbell.
- Coalinga plot. 6/5/43. W.A.C.
- Coalinga plot, C-60. 1/20/45.
- Indicator plot, Shafter, Calif. 2/15/45. W.A.C.
- Shafter plot, guayule plants 2 months old. 5/28/42. W.A.C.
- Shafter plot, Est. March 25 and 26, 1942. Photo 5/28/42. W.A.C.
- Shafter plot, guayule plants 2 months old, spacing 12". 5/28/42.W.A.C.
- Shafter test plot, Calif. 8/18/42. W.A.C.
- Shafter test plot, Calif. 8/18/42. W.A.C.
- Shafter plot, 1/13/44. W.A.C.
- Shafter plot, September, 1943.
- Shafter plot, September 1943.
- Indicator plot, Simmler, Calif. 12/11/44. W.A.C.

- Indicator plot, C-64, Simmler, Calif. Cavanaugh property. 11/23/43. W.A.C.
- Cavanaugh plot, Carrizo Plains, Calif. Dry land planting. 8/20/43.
- Cavanaugh plot, Carrizo Plains, Calif. Dry land planting. 8/20/43.
- Cuyama Valley Indicator plot, C-67. 11/23/43. W.A.C.
- Cuyama Valley plot being irrigated, 8/20/43.
- Cuyama Valley plot. Note difference in size of plants planted at same time in the spring of 1943. 11/23/43. W. Campbell.
- Closeup of two plants showing contrast in size between plants planted March 1943 in the Cuyama Valley. 11/23/43. W. Campbell.
- Nipomo plot, N.W. corner of planting, 28" rows, dry land planting beginning to grow in N.W. corner but practically no growth in south and S.E. portion of field. 8/20/43. J.T.P.
- Garey plot. Established May 1, 1942. Photo May 28, 1942. W. Campbell.
- Garey plot. Dry land planting. Good growth some loss. Loss due to spring rains. 8/21/43. J.T.P.
- Palmdale plot, 1/13/44. W. Campbell.
- Palmdale plot, C-70. 1/13/44. W. Campbell.
- Palmdale plot, C-70. Approx. 1 month old, being irrigated. Survival 80% - 90%. 5/14/42. W. Campbell.
- Little Rock test plot, CA C-71. 8/20/42. W. Campbell.
- Little Rock plot, C-71. 1/13/44. W. Campbell.
- Little Rock plot, C-71. 1/15/43. W. Campbell.
- Little Rock plot, C-71. Seven weeks after planting. 5/15/42. W.A.C.

- Little Rock plot. 12/12/44. W. Campbell.
- Indicator plot, Moreno, CA. 12/15/44. W. Campbell.
- Indicator plot, Moreno, CA, C-72. 12/15/44. W. Campbell.
- Moreno plot, C-72. One month after planting. 5/14/42. W. Campbell.
- Moreno plot, C-72. 1/13/44. W. Campbell.
- Hemet plot, C-73. 1/13/44. W. Campbell.
- Hemet plot, C-73. 1/13/44. W. Campbell.
- Hemet plot, C-73. 6/12/43. W. Campbell.
- Hemet plot, C-73. 6/12/43. W. Campbell.
- Hemet plot, C-73. 1/15/43. W. Campbell.
- Hemet plot. One month after planting. 5/15/42. W. Campbell.
- Hemet plot. Est. April 15/ 1942. Photo May 15, 1942. W. Campbell.

426124 - Land preparation at Indio Nursery, Bell East Unit. Soil being worked prior to planting. CA February, 1943.

426125 - Cultivating guayule planted November, 1942. Operators shown are women, Indio Nursery, CA. February, 1943.

419870 - Alisal Nursery during hand-weeding season. At this time over 2000 workers were employed - a majority of them women and girls. C. Taylor. 6/20/42.

426588 - Carryall scraper, six yard, being pulled by heavy Allis-Chalmers tractor. Used in moving heavy dirt in preparing soil for irrigation prior to planting. Bakersfield District. May, 1943.

426597 - Two offset discs operated by Mr. and Mrs. Fred M. Parker. Bakersfield District. July 1943.

418475 - Six-row guayule cultivator; front view. Intercontinental Rubber Co.

426581 - Cultivator attachment on Ford tractor. Wasco Unit, Bakersfield District. August, 1943.

426578 - Beet and bean cultivator attached to Case tractor, used for cultivating four rows of guayule plants soon after planting. Bakersfield District. March, 1943.

426584 - Cultivator, attached to Ford tractor, Cultivating four rows of guayule at Wasco Unit, Bakersfield Dist. Aug., 1943.

426586 - Four row cultivator; lister shaped shovels make shallow ditches between two rows to facilitate irrigation. Wasco Unit, Bakersfield District, Aug., 1943.

426593 - Cultivating newly planted guayule, Salinas District. March 1943.

426594 - Four row cultivator operating at Wasco, Bakersfield Dist. Aug., 1943

426583 - High pressure oil-spray machine being used on field near Salinas CA. March, 1943.

419941 - Nursery section on which primary ground preparation is completed and slat fencing ready to be installed for wind protection. Sprinkler lines were in place during primary ground preparation. C. Taylor. 4/26/42.

426590 - High pressure oil weed sprayer being used on newly planted guayule field near Salinas, CA. March, 1943.

- Weed control. Oil spray tests.

426587 - No description.

424581 - Typical guayule plants grown with and without irrigation; during the first year after transplanting. Actually about 8 months after transplanting of 1-0 stock. Taken from Albert Hanson field and mounted. C. Taylor. 12/28/42.

424582 - View of adjacent fields of irrigated and unirrigated guayule, transplanted at same time; on Albert Hanson field east of Alisal Nursery at Salinas, CA. C. Taylor. 12/28/42.

424573 - Plowing out one row of mature guayule shrubs with single standard U-type plows. Arguello field near Salinas, CA.

426585 - Marvin land plane. Used to smooth down ridges and fill in low places on land prior to planting. This operation makes later irrigation cheaper and more effective. Bakersfield, CA. May 1943.

- Research - Miscellaneous.

426986 - Analyzing samples of guayule seed to determine whether cleaning machines are operating efficiently. Samples are taken hourly from each machine and if analyses show too great a percentage of good seed being lost, the machine is shut down for better adjustment. The operator is Mrs. Nellie M. Brown. Circle Ranch seed plant near Bakersfield, 10/22/43.

419974 - Greenhouse test sowings in connection with seed-treating experiments. At the right is Carl A. Taylor, Chief seedsman, who took photo. 5/14/42.

- Plot No: T-77. Owner: S.C.S. Nursery. State: Texas.
- Plot No: T-77. Owner: S.C.S. Nursery. State: Texas.
- Plot No. T-61. Owner: J.H. Clopton. State: Texas.
- Plot No: T-21. Owner: Mrs. Joseph Schlegel. State: Texas.
- Plot No: T-55. Owner: F.C. Weyrich. State: Texas.
- Plot No: T-57. Owner: A.L. Burkett. State: Texas.
- Plot No: T-17. Owner: Webb Farms (by office). State: Texas.
- Plot No: T-19. Owner: Webb Farms (back of house). State: Texas.
- Pearsall test plot, Pearsall, Texas. Planted in 1928. Photo June 1928.
- Plot No: C-1. Owner: A.T. Spencer. State CA.
- Plot No. C-1. Owner: A.T. Spencer. State: CA.
- Plot No: C-1. Owner: A.T. Spencer. State: CA.
- Plot No: C-2. Owner: La Vere Barneson. State: CA.
- Plot No: C-2. Owner: La Vere Barneson. State: CA.
- Plot No: C-2. Owner: La Vere Barneson. State: CA.
- Plot No: C-3. Owner: H.C. Fredericksen. State: CA.
- Plot No: C-3. Owner: H.C. Fredericksen. State: CA.
- Plot No: C-3. Owner: H.C. Fredericksen. State: CA.

- Plot No: C-3, Owner: H.C. Fredericksen, State: CA.
- Plot No: C-4, Owner: Geo. Otterson, State: CA.
- Plot No: C-4, Owner: Geo. Otterson, State: CA.

425434 - Trays of guayule rubber after baking. Turns rubber black. Salinas, CA. Taken by R. Haythorne, 3/25/43.

425428 - Closeup of screen dippers, dipping guayule rubber from large vat. Salinas, CA. Taken by R. Haythorne, 3/25/43.

425426 - Guayule rubber worms being agitated in small vat, Salinas, CA. Taken by R. Haythorne, 3/25/43.

425425 - Guayule rubber worms flowing out of pebble mill with water, Salinas, CA. Taken by R. Haythorne, 3/25/43.

425424 - Guayule rubber worms flowing out of pebble mill with water, Salinas, CA. Taken by R. Haythorne, 3/26/43.

425423 - Pebble mill for crushing or chewing guayule shrub, Salinas, CA. Taken by R. Haythorne, 3/26/43.

425422 - Four pebble mills used for crushing or chewing the guayule shrub, Salinas, CA. Taken by R. Haythorne, 3/26/43.

425421 - Crushed guayule on conveyor belt going to pebble mills at Salinas, CA. Taken by R. Haythorne, 3/26/43.

425416 - Bale of guayule in the rubber mill, being put in trough of water for washing prior to processing. Taken at Salinas, CA, by R. Haythorne, 3/27/43.

418488 - Guayule factory at Salinas, CA. Vacuum dryers. Intercontinental Rubber Co.

418487 - Tube mills at factory in Salinas, CA. Intercontinental Rubber Co.

425417 - Guayule plants on conveyor belt going to chopping machine in mill at Salinas, CA. Taken by R. Haythorne, 3/26/43.

425419 - Guayule plants on conveyor belt going to crushing rollers in mill at Salinas, CA. Taken by R. Haythorne, 3/26/43.

425438 - Boxes of guayule rubber blocks ready for shipment. Salinas, CA. Taken by R. Haythorne, 3/26/43.

425439 - Boxes of guayule rubber blocks ready for shipment. Salinas, CA. Taken by R. Haythorne, 3/26/43.

425440 - Boxes of guayule rubber blocks being loaded into box car. Salinas, CA. Taken by R. Haythorne, 3/24/43.

425441 - Boxes of guayule rubber blocks being loaded into box car. Salinas, CA. Taken by R. Haythorne, 3/24/43.

425442 - Boxes of guayule rubber blocks being loaded into box car. Salinas, CA. Taken by R. Haythorne, 3/24/43.

425443 - Boxes of guayule rubber blocks loaded into box car. Salinas, CA. Taken by R. Haythorne, 3/24/43.

425436 - Block of guayule rubber weighing approx. 100 lbs., being loaded into box. Salinas, CA. Taken by R. Haythorne, 3/25/43.

425437 - Box of guayule rubber blocks being closed for shipping purposes. Salinas, CA. Taken by R. Haythorne, 3/24/43.

425418 - Closeup of guayule plants on conveyor belt going to chopping machine in mill at Salinas, CA. Taken by R. Haythorne, 3/26/43.

425433 - Trays of guayule rubber being placed in bake oven, Other ovens in foreground. Salinas, CA. Taken by R. Haythorne, 3/25/43.

425415 - Bales of guayule plants in the rubber mill at Salinas, CA. Truck load in foreground. Taken by R. Haythorne, 3/27/43.

425432 - Guayule rubber worms being place in shallow trays preparatory to baking, Salinas, CA. Taken by R. Haythorne, 3/25/43.

425431 - Closeup of guayule rubber on screen shaker, Salinas, CA. Taken by R. Haythorne, 3/25/43.

425430 - Trough dipper scooping guayule rubber from large vat, Salinas, CA. Taken by R. Haythorne, 3/25/43.

Bundle No. 12

Printed pictures

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Box No. 6
page 29

- Coalinga test plot, CA. 8/18/42. W. Campbell.
- Coalinga plot. Six weeks after planting. 5/13/42. W. Campbell.
- Coalinga plot. Closeup of three plants six weeks after planting. 5/13/42. W. Campbell.
- Coalinga plot. 5/13/W. Campbell.

418472-- Guayule plants in field 3 months old. Intercontinental Rubber. Co.



419924 - Carpenters starting the frame of one of the buildings of labor camp, east of Salinas. C. Taylor. 4/1/42.

419925 - Framework of last buildings being built in connection with labor camp, east of Salinas. Contract was let 3/11/42. C. Taylor. 4/1/42..

419926 - Plumbers at work during construction of labor camp, contract for which was let 3/11/42. C. Taylor. 4/1/42.

419927 - Saw operators at work on labor camp, contract for which was let 3/11/42. C. Taylor. 4/1/42.

419928 - Concrete crew at work on construction of labor camp. Contract let 3/11/42. C. Taylor. 4/1/42.

419929 - Portion of nearly completed buildings of Camp McCallum, east of Salinas. Contract let 3/11/42. C. Taylor. 4/1/42.

419930 - Northerly view of Camp McCallum from water tower, showing some of the nearly completed buildings. Contract let 3/11/42. C.Taylor. 4/1/42.

419931 - Construction of labor camp east of Salinas. Looking west from water tower. Contract let 3/11/42. C. Taylor. 4/1/42.

419932 - Construction record of labor camp, east of Salinas. Looking south from water tower, showing nearly completed buildings and well. Contract let 3/11/42. C. Taylor. 4/1/42.

419933 - Progress record of construction of labor camp for housing workers, contract for which was let 3/11/42. C. Taylor. 3/13/42.

419960 - Labor camp built and maintained by Emergency Rubber Project for workers. C. Taylor. 4/30/42.

419961 - Labor camp built and maintained by Emergency Rubber project for workers. C. Taylor. 4/30/42.

419962 - Labor camp built and maintained by the project for workers. C. Taylor. 4/30/42.

419963 - Interior of workers wash room at Camp McCallum. C. Taylor. 4/30/42.

421075 - Copy of architect's drawing of Camp McCallum, labor camp for housing workers of Emergency rubber Project. C. Taylor. 6/27/42.

419934 - Exterior of seed house which was built in 18 days from letting of contract. C. Taylor. 4/26/42.

419914 - Progress record of seed-processing building. Taken 8 days after letting of contract. C. Taylor. 3/8/42.

419993 - Last batch of concrete going to foundation forms of seed-processing plant, contract for which was let 3 days previously. C. Taylor. 3/5/42.

419892 - General view of grading and construction of seed-processing plant, contract for which was let 3 days previously. C. Taylor. 3/5/42.

419891 - Pouring concrete in footings of seed-processing building, contract for which was let 3 days previously. C. Taylor. 3/5/42.

423979 - Fire lookout tower used in connection with a mature guayule field in the Salinas Valley of California. Guayule burns readily and with great intensity. It was once used in Mexico for the purpose of smelting metal.

422895 - Indio Nursery on the Bell Ranch. View of main ranch house, facing one of the fields. C. Taylor. 9/24/42.

425631 - Equipment shop at Salinas, CA. 5/8/43. P. Roberts.

419841 - Good guayule patch showing sample transect. The shrubs in some such sample areas were pulled and weighed as well as recorded for number, size, etc. M. Culley. 1942.

No Number - Miscellaneous prints taken by C.K. Cooperrider in Mexico. 1943-44.

419919 - View from office of Alisal Nursery of Project; showing mountains which border the Salinas Valley. C. Taylor. 3/11/42.

419839 - Sheep or goat ~~browsing~~-browsing. Note rough, broken, or pulled character of stems as contrasted with clean cuts in photo 419838 showing damage by rodents. M. Culley. 1942.

419838 - Typical of severe rabbit or rodent damage. Note knifelike cuts on pruned stems which identify offender. Such damage largely on overgrazed areas. (two packets of pictures).

419857 - Miscellaneous equipment taken over from Am. Rubber Co. for reconditioning and immediate use. C. Taylor. 3/8/42.

No Number - Poor stand resulting from crown-rot. Large plant in center foreground recently killed. Beardsley planting near Litchfield, Arizona.

No Number - General view of portion of field most severely affected by crown-rot. Beardsley planting near Litchfield, Arizona.

No Number - Planting showing excellent growth made by plants not affected by crown-rot; poor stand at right caused in part by crown-rot. Beardsley planting, near Litchfield, Arizona.

No Number - Beardsley planting near Litchfield, Arizona. Note skip in rows and large plant left center recently killed by crown-rot. 1942.

419916 - Interior view of supply warehouse established at Salinas, CA with recent arrival of supplies. C. Taylor. 3/9/42.

419918 - Miscellaneous equipment taken over from Am. Rubber Co. for reconditioning and use. C. Taylor. 3/8/42.

419915 - Tractors and implements which were transferred in from other Forest Regions for use on the project. C. Taylor. 3/9/42.

422896 - Nursery on Bell Ranch at Indio, CA. Machinery yards and sheds. C. Taylor. 9/24/42.

425399 - E.R.P. Camp taken from tower at Indio, CA by R. Haythorne on 4/2/43.

425398 - E.R.P. Camp taken from tower ~~at~~ Indio, CA by R. Haythorne. 4/2/43.

422901 - Guayule nursery on Bell Ranch, Indio, CA. Starting construction of road into labor camp site. C. Taylor. 9/24/42.

422900 - Guayule nursery on Bell Ranch, Indio, CA. site of labor camp for nursery workers. C. Taylor. 9/24/42.

419965 - Interior of one of the kitchens at labor camp, built and maintained by the project for workers. C. Taylor. 4/30/42.

419964 - Interior of one of the dining rooms at labor camp built and maintained by Project for workers. C. Taylor. 4/30/42.

26119 - Oil-sprayer in operation, nursery bed type. Taken at Indio Nursery, Bell East Unit, Block 57, Section 7, CA. April, 1943. Five to one emulsion.

419952 - Beds being seeded. C. Taylor. 4/26/42.

419953 - Last bed of a block being sown, and sprinkling following immediately after sowing. C. Taylor. 4/26/42.

Sa46a-BPI - Salinas Harvest attachment, four row pull-type showing seed brushes and pans. 7/12/43. McBirney photo.

426115 - Effects of oiling on weeds. Indio Nursery, Bell East Unit, Block 56, Section 3. Five to one emulsion. CA. April, 1943.

426116 - Effects of oiling on weeds. Indio Nursery, CA, Bell East Unit, Block 56, Section 3. Five to one emulsion. April, 1943.

No Number - General view of nursery seedlings made July 7. Photographed August 12. After one or two oilings.

434266 - Pickup type balers baling guayule shrub after it has been dug, properly cured, and windrowed with a side-delivery rake. May 9, 1945, 5 miles northwest of Patterson, Stanislaus, CA.

418483 - Closeup of guayule harvesting digger machine by which 2 rows are dug and combined into 1 windrow. Intercontinental Rubber Co. 1/26/31.

No Number - Seeding in nursery made July 7. Closeup of handweeded and oiled plots. Photo August 3.

425945 - Scene in the Salinas Nursery, Salinas, CA. W. Schoeb. July 1943.

424578 - Guayule nursery bed seed harvester developed by Forest Service. Alisal Nursery near Salinas, CA.

419956 - Closeup of guayule in bloom. C. Taylor. 4/30/42.

424205 - The presprouted guayule seed is seeded in 4 inch bands and is immediately covered with a thin covering of sand from the sand box on the seeder. Carlsbad Nursery, Carlsbad, CA. W. Baxter. 11/30/42.

418468 - Closeup of digger loosening guayule plants at beginning of the bed. Intercontinental Rubber Co.

419840 - Good stand of young guayule within fenced road right-of-way. Area to right of fence, nothing but dead remnants of old plants outside; is not a corral or driveway but open range. M. Culley. 1942.

419957 - Closeup of guayule shrub in bloom. They bloom and produce seed most of the summer. C. Taylor. 4/30/42.

419908 - Nursery crew removing undercut seedlings for transplanting to the field. C. Taylor. 3/8/42.

No Number - Oil weed spray.

No Number - General view of seedings made May 12, 1944..

No Number - View looking across beds seeded July 7, 1944.

424582 - View of adjacent fields of irrigated and unirrigated guayule, transplanted at same time; on Albert Hanson field east of Alisal Nursery at Salinas, CA. C. Taylor. 12/28/42.

424207 - The lines of the overhead watering system are turned automatically by means of water power and a heavy counter-weight. Indio Nursery, Indio, CA. W. Baxter. 12/3/42.

421694 - Guayule seed harvest. Two days picking, in the holding yard awaiting transportation to the cleaning mill. C. Taylor. 7/3/42.

No Number - Thrashed guayule seed. 2/12/46.

No Number - 1944 Nursery stock.

419909 - Nursery crew weeding seedling beds at Alisal Nursery near Salinas, CA C. Taylor. 3/8/42.

418467 - Digger for loosening guayule plants in beds before removal. Inter-continental Rubber Co.

422603 - Picking guayule seed. There is a mechanical seed picker which collects seed more economically as to cost but which gets only about 25% of the seed. By the handpicking method the circular tray is slid under the plant and the seed gently knocked off into tray by hand Chamber of Commerce, 1942.

- Erickson.
- Erickson.
- Topped and untopped plants cut apart. P. Smith.
- Topping levels. Erickson.
- Santa Rita beds. Schoeb. 9/15/42.
- Thiosan treated (dusted) seed experiment, Santa Rita Nursery, Block 17, Sec. 7, Beds 8.7.6.& 5. Thiosan beds 8 & 6. Dry seed bed 7. Soaked seed bed 5. Seed sown May 28, 1943. Photo 8/13/43. Schoeb.
- Guayule seedlings 2½ months old in Block 17 Santa Rita Nursery sown May 28, 1943. Adjacent to unthreshed sowing. Note increase in canopy starting bed 1 next to water line thru bed 6. Photo by Schoeb. 8/12/43.
- Seedlings 2½ months old from dry threshed (bed on left) and dry unthreshed (bed on right) seed. Santa Rita Nursery Block 17. Photo by Schoeb. 8/12/43.
- Sand splash seedlings. June 1943.
- Seed treatments. Soil thermograph and shelter used in seed treatments to determine soil temperature. Temperature was taken just beneath layer of sand which covered seed. Appox. $\frac{1}{4}$ inch. Alisal Nursery, Block 2. Section 4. Photo by Schoeb. 6/21/44.
- Soil Amendments. Soil amendment plots in block 21. Various amounts of guayule tops and ammonium sulfate was used. Photo by Schoeb. 6/21/44.
- Se - Seed treatments. Counting guayule seedlings. Alisal Nursery, Block 2, Section 3. Schoeb. 6/21/44.
- Seed treatments. Direct seeding-sub-irrigated seeding with seed treatments. Seed were planted in pressed furrow and covered partially with soil. Schoeb. 6/21/44.
- Sand splash seedlings. June 1943.
- Sand splash seedlings. June 1943.

- Sand splash seedlings. June 1943.

- Sand splash seedlings. June 1943.

- Lost div. NS, 17 mos. P. Smith. 10/31/44.

- Graphs of Days in soil vs. % moisture in roots; and Top treatment vs. % rooted in 10 days.

- Erickson. 10-18.

- Erickson.

Erickson. 10-26.

- Erickson. G. in soil. 10-23.

- Erickson. 9-18. Block 52.

- Erickson. 8-30. Lat. in water.

- Erickson. 10-17. Soil laterals.

- Erickson. 3' G.

- Erickson. T levels.

- Nursery stock, cutting, seedling. P. Smith. 2/10/45.

- Negative and positive transparency of map showing locations of areas suitable for guayule production.

- Yuma Mesa guayule broadcast seeding on alfalfa land. 10/5/45.
- Yuma Mesa guayule broadcast seeding on raw land. 10/5/45.
- Rapid method of separating by means of specific gravity, the heavy mature seeds which germinate fairly well; from the light immature seeds which germinate very poorly.
- Plants grown in sand on nutrient solutions lacking in boron, manganese, and iron respectively, in order to observe and be able to recognize these deficiency symptoms when encountered in the fields.
- Nutrit~~ion~~ experiments with guayule being carried under controlled conditions at Beltsville.
- Nutrit~~ion~~ experiment showing size of plants four months after they were transplanted from a field nursery bed.
- Plants arranged on trucks so so that they can be easily moved into controlled temperature chambers for any desired lenght of time in order to study the effect of different temperatures on vegetative growth, seed production, rubber synthesis and storage.
- Plants irrigated with water containing progressively greater amounts of boron (left to right) to show injury similar that which might result from repeated use of high boron irrigation water in the field.
- Nutrit~~ion~~ experiment showing plants growing in gravel; different combinations of fertilizer elements are beign supplied in order to determine those which are best suited to the production of rubber and seeds.
- Direct seeded guayule five months after planting. Note ~~that~~ it is producing a good crop of seed. BPI experimental plot near Anthony, New Mexico
- Guayule baler at work in a field near Bakersfield, CA. Special attachments for this machine were devised by ERP. Bal~~es~~ weigh about 200 lbs. each. May, 1945.
- Side delivery rake windrowing guayule shrub near Bakersfield, CA. May, 1945

435418 - Windrowing guayule shrub with a side-delivery rake operated by power take-off from a Ford tractor. Shrub is cut four inches below ground line and is baled directly from these windrows. Two-year-old field, 3 miles west of Vernalis, CA.

- Baled guayule in the bodega at Bakersfield Mill. Shrb goes through a conditioning period in this shed where the rubber is consolidated in the cells.

- Negatives - root studies.

435416 - Baling guayule shrub with hay baler and specially designed heavy pickup attachment constructed in Forest Service shops. Guayule bales are same dimensions as hay bales, but twice as heavy. This is two year old field, one mile west of Shafter, CA.

419952 - Beds being seeded. C. Taylor. 4/26/42; Salinas, CA.

435415 - Baling guayule shrub with hay baler and special pickup attachment. Attachment was built in Forest Service shops for this particular purpose. Field is ~~one~~ mile west of Shafter, CA and the crop is two years old.

433939 - Oil spray machine.

426591 - Bulldozer mounted on 50 H.P. Caterpillar in use digging drainage ditch at San Mateo nursery, Southern CA District. April, 1943.

- Indicator plot C - 5½ Mendota, CA. 1/26/45. W. Campbell.

425628 - Oil spray machine on Wasco Plantation Unit in Bakersfield District, CA. P. Roberts. 5/7/43.

- Plot No: C-4, Owner: Geo. Otterson. State: CA.

- Plot No.: C-4. Owner: Geo. Otterson. State: CA.

- Plot No.: C-4. Owner: Geo. Otterson. State: CA.

- Plot No.; C-51. Owner: W,J, Hammonds. State: CA.

- Plot No.: C-5. Owner: C.L.Wolcott. State: CA.

- Plot No.: C-5. Owner: C.L. Wolcott. State: CA.

- Plot No. C-5. Owner: C.L. Wolcott. State: CA.

- Plot No. C-5. Owner: C.L. Wolcott. Staite: CA.

- Plot No.: C-9. Owner: Uni. of CA. State; CA.

- Plot No.: C-9. Owner: Uni. of CA. State: CA.

- Plot NO.: C-10. Owner: Uni. of CA. State: CA.

- Plot No.: C-15. Owner: S.C.S. Nursery. Stat: CA.

- Plot No. : C-15. Owner: S.C.S. Nursery. State: CA.

- Plot No.: C-15. Owner: S.C.S. Nursery. State: CA.

- Plot No.: C- 16. Owner: B.V. Arambel. State: CA.

424574 - Guayule nursery bed seed harvester harvesting seed from first year field plantings. Bardin Field At Alisal Nursery near Salinas, CA.

Correspondence relating to guayule research - 1950 - 1969.

Includes:

- A. Guayule research
- B. Progress of work
- C. Need for additional funds
- D. Cost cutting
- E. Disposal of stock piled seed

Also includes: one copy U.S.D.A. Tech. Bull. No. 1327 (1965).

Experiments, Lab. File, Field Notes.
Research records of the International Rubber
Company, purchased by Government at the beginning
of World War II.

- Spence, David. Improvements in guayule rubber - retting - 11 pages. Intercontinental Rubber Co. December 10, 1927.
- Exp. 276S 1 to 11. Improvement in guayule rubber - retting by D. Spence.
- Synthetic Rubber Patents. Awarded local inventor, Julio Telez de Giron, December 10, 1931, San Francisco Examiner. 'Auto tires being produced in Mexico City'.
- Machinery - Baker, Perkins Co., Inc. Werner & Pfleiderer Division. Condensed Catalog No. 30, 7 pages.
- Machinery - Baker, Perkins Co., Inc. Werner & Pfleiderer Division. Catalog No. 27, 83 pages.
- Exp. 283S⁴ - Treatment of Guayule Rubber for Chewing Gum Manufacture. Use of mild alkalies to remove the guayule taste. January 5, 1932.
- Exp. 283S³ - Treatment of Guayule Rubber to Make it Suitable for Use as a Chewing Gum Base. December 5, 1931, November 30, 1931, December 12, 1931, December 21, 1931.
- Exp. 283S² - Preparation of Chewing Gum Rubber from Guayule. October 29, 1931.
- Exp. 283S¹ - Preparation of Chewing Gum Rubber from Guayule. Steaming of shrub at atmospheric pressure. February 15, 1929.
- Exp. 283S - Treatment of Guayule for Chewing Gum Manufacture. The removal of taste and odor from guayule rubber. December 14, 1928.
- Research records of the Intercontinental Rubber Company, purchased by U. S. D. A. at beginning of World War II. (Guayule). Mr. G. H. Carnahan, President. Exp. 283S - About 150 pages of correspondence dealing with processing and purifying guayule for chewing gum. Machinery companies, etc.
- McCallum, W. B. General Reports - G-4, Shrub Curing - plant functions. About 50 pages of details.
- Fitzgerald, F. F. American Can Co. - Rubber cement for sealing fruit and

vegetable cans. February 10, 1922.

- Yeandle, W. H. Root rot in guayule. Tests in seedlings and soils for root rot. November 25, 1931.
- McCallum, W. B. Range studies - dealing with root rot in guayule - 25 pages. File G-4.
- McCallum, W. B. 'Old' Arizona reports and Laboratory results. S2(YU) - Indicator plots in Arizona. File G-4.
- Continental, Arizona. Tests, 1924, Salinas, Davis and Bernardo - % BDS, L-1, Plant analysis.
- Acquisition of Monterey County, Calif land. @ 50 pages of correspondence. October 13, 1930. L(YU) - Acquisition.
- Acquisition of land in many areas of California for growing guayule. San Diego County lands. (@ 250 pages of correspondence).
- McCallum, A. F. Bird Rock Nursery, Calif, guayule plants - all cleaned out. G-2. July 18, 1923. (@ 15 pages, including copy of lease).
- Inventory and condition of plants at various stations - varieties, spacing, and percent stands given; total rainfall gr 2 seasons; irrigation. Var. #109, #130, and #580. - Gon - Zales Station, Monterey Co., Calif. Average stand @ 63.2 - 64.1 %.
- Exp. 285^{l-37}. Methods of Analysis of Shrub. Preliminary report on grinding of shrub in experimental ball mill. (@ 300 pages of experiments). September 15, 1927. Using various solvents to extract guayule rubber.
- Lab files - General #1. Extraction of guayule rubber. Reports in letter form written to G. H. Carnahan and later to C. L. Baker, Presidents, Torreon, N.Y.O. concerning experiments using various methods and materials to obtain the highest percent rubber from the shrub. January 10, 1939 - December 23, 1941. About 120 pages.
- Lab. files - General #2. Letters concerning the work being done in perfecting a method for extracting guayule rubber that would work on all batches of the shrub no matter where grown or what laboratory (factory) does the work. January 14, 1936 - December 28, 1936. About 100 pages.

- Exp. 284, 285, 276. Weekly reports of work (October 1, 1927 - May 8, 1928). A. Drying shrub; wood tar and other materials tried as anti-oxidants; different methods of aging; temperature of water used to wash shrub. B. Extraction of rubber: use of carbon tetrachloride instead of Benzene; effect of ball mill grinding; fermentation tests (Preliminary report). Also, letters discussing reports and one copy of Exp. 237(#264) - Study of dirt in rubber, and one copy of Pentosan Estimation taken from Ind. and Eng. Chem. 15. 748. July 1923. About 175 sheets.
- Lab. Files - General #3. Experiments 36 and 37 aimed at providing a rubber that would be acceptable to the rubber companies (Firestone, Goodyear) were mainly concerned with various chemicals such as Benzidine Base, Salinas and Firestone Zinc oxide, quick lime, versus hydrated lime and methods of incorporating them. About 120 pages. Covers period July 8, 1935 - December 28, 1935.
- Lab. Files - General #4. Improving quality of guayule rubber: Reports on milling tests, resin content, rubber break down (static electricity), worm retting. Also, discussion of the failure of government chemist (Dr. Boucher) to duplicate his previous results when he worked in Firestone Lab. About 115 pages. January 5, 1937 - October 8, 1938.
- Exp. 413S - Torrean Lab. Correspondence (letters and telegrams) concerning equipping the Torrean Lab. Covers period July 15, 1941 - April 4, 1942. 40 pages.
- Exp. 412S - H.T.H. seed treatment. Object: to observe the effect of H.T.H. treatment on seed presprouted in usual way (6% of sol. H.T.H. used). December 9, 1929. 22 pages.
- Exp. 411S - Nursery seedlings. Testing variety #111, #593, #406. 6 pages.
- Exp. 410 - Deresination of guayule. Work on adding and removing resin from rubber. Work on nursery seedlings. Also, sheets on cost of domestic production of guayule rubber and on navy rubber. About 34 pages. February, 1942.
- Exp. 410S - Deresination of rubber. Report on deresination of Pontianak rubber (work done in 1912 and 1913). Report on deresination of guayule rubber (December, 1940). Correspondence concerning equipment necessary for deresination of guayule rubber. October 30, 1940 - February 6, 1942. About 150 pages.
- Exp. 409S - Dispersion of guayule rubber. Work done to show ways of recovering that portion of the rubber that is dispersed in partially dried shrub. Use of formic acid considered, not practical. December 23, 1941. 4 pages.

- Exp. 408S - Plantation Rubber "Tests". Results of physical tests on four batches of plantation rubber. Samples tested under the Firestone modification of the A. C. S. formula. September 29, 1938. 2 pages.
- Exp. 407S - Bureau Standards Evaluation of Guayule Rubber. Bureau of Standards had no standards for unfinished rubber of any kind, so some had to be set up. Guayule rubber made a good showing on them. January 26, 1937 - February 9, 1937. 10 pages.
- Exp. 406S - Dry Crushing of Shrub and Mill Results. Variations in the size of pieces of shrub were made and results given. It seems that size does not make much difference in the worms produced. February 24, 1939 - December 23, 1939. 10 pages.
- Exp. 405S - Inner Tube Compound - Guayule Rubber. A blend of guayule rubber and ground scrap inner tubes were used to make a rubber product with more qualities that commercial firms might want. December 24, 1938 - February 28, 1939. About 41 pages.
- Exp. 404S - "Formulae" Guayule Rubber. Three formulae are compared: A. C. S., Vanderbilt, and S-1. Also, a series of eight formulae of the S-series are given and compared. March 23, 1939 - December 12, 1941. 19 pages.
- Exp. 402S - Effect of Irrigation on Plant Growth and Rubber Content. Plants given more water were larger. Complete comparison tables given. October 9, 1929. 3 pages (3 copies).
- Exp. 403S - Drying Tests, "Sargent's Corp". Correspondence concerning buying of drying equipment from Sargent's Sons Corp., makers of textile machinery. (1 picture of drying machine). Also, testing of various methods of drying rubber, such as: air, heated air. March 19, 1929 - June 30, 1941. About 40 pages.
- Exp. 400S - Effect of soil on Plant Growth and Rubber Content. Fertilizers aid plant growth only when soil has become deficient - after about 5 yrs. on normal soil. May 25, 1929. 8 pages plus duplicates. (2 Folders)
- Exp. 306S - Separation of Worms and Fibers. Screening through rectangular mesh Hum-mer screens vs. flotation. The mesh screen had openings of $\frac{1}{2}$ " parallel to the axis of rotation and 8-mesh at right angles. October 20, 1930 - June 4, 1941. About 34 pages, 1 picture of screen. (3 copies of report).
- Exp. 304S - Rubber Balls. Abrasion losses of rubber covered lead or copper balls in the factory washing mill. Estimated cost of manufacture in the Salinas laboratory of solid rubber balls for factory scrubbing mill.

August 4, 1929 - August 7, 1931. 60 pages.

- Exp. 307S - Effect of irrigation upon plant growth and rubber content. Also, copies of Exp. 299S², 298S³, 298S¹, S², S³, 303S². All dealing with irrigation in different amounts. 1931-1932. 42 pages.
- Exp. 308S - New uses for guayule rubber. Rubber cement for binding the plies of Kraft Paper Bags. Tests using benzol, carbon tetrachloride and casing head gasoline were tried. Drying problems were overcome to some extent by use of accelerators. November 23, 1931 - December 8, 1931. About 30 pages. Also, a report stating that guayule rubber is not suitable for chewing gums.

- Exp. 276S - Tests on Guayule Shrub, Retting, Etc. Correspondence and test procedures and results of the period October 6, 1927 - April 18, 1931. Most of the work concerned the retting of guayule shrub or rubber worms. About 175 pages.
- Exp. 277S - Effect of Milling on Acetone Extract (Re-milling of Factory Worms). Series of tests to show that over or under milling has little effect on tensile strength, however, overmilling did increase the acetone extract. June 21, 1927 - August 10, 1927. About 28 pages.
- Exp. 278S - Shrub Storage Experiments. Shrub was stored for 30 days. Was tested at end of 20 days and then returned to storage. Practically no difference in results at end of period. November 18, 1931. 3 pages.
- Exp. 279S - Changes in the composition of guayule shrub brought about by aging under different conditions. Long (142 days) storage under harsh conditions seems to reduce the tensile strength of some samples. 1929 - 1931. About 70 pages.
- Exp. 280S - The Milling of "Diseased" Shrub. Shrubs show black, almost burnt appearance on one side of plant and when cut have a "funky" odor. No difference in appearance of rubber, but less was extracted from plants and this had a higher tensile strength. July 21, 1947. 5 pages (2 copies).
- Exp. 281S - Explosion Methods as Applied to Shrub Before Milling. Effect of high pressure steam system on shrub (darkened the color and finally shredded the shrub). February - March, 1928. 50 pages.
- Exp. 282S - Misc. records (unclassified) such as: Analysis of beans for caffeine, samples of sprayed latex rubber, composition of factory dust, U. S. patent report on synthetic rubber, analysis of Hevea serum from Sumatra. September 5, 1929 - May 13, 1930. About 75 pages.
- Exp. 283S - Experiments on preparation of Chewing Gum from Guayule. Correspondence concerning use of guayule as rubber to seal tin cans and as chewing gum. Experiment using 5% caustic soda. Discussion of Paloamaillo tree and the white gum it produces. April 6, 1922 - December 12, 1931. Included Several aids for emulsifiers. About 180 pages.
- Exp. 285S - Methods of Analysis of Shrub. Summaries of the different methods and materials used in the analysis of guayule shrub. Mostly 1927 - one 1929 report. About 100 pages.
- Exp. 260S - Misc. milling results on guayule shrub. Leaching of shrub under pressure or vacuum with chemicals. 1927 - 1940. About 40 pages.
- Exp. 261S - "Bricketting" as a means of preserving shrub. "Bricketting" or baling of shrub increases the heating up of shrub, which helps to get

rid of sugars and other products. July 18, 1927. 12 pages (2 copies).

- Exp. 262S - A Study of Possible Oxidation During Cooling After Vacuum Drying. The experiments carried out showed no appreciable oxidation during cooling whether in air or a vacuum. 1927 - 1928. 23 pages.
- Exp. 263S - Study of the Dispersion of Guayule Rubber in Water and the Co-aglability of the same. Various experiments were done to pinpoint the best methods to use for factory milling. 1927 - 1928. 78 pages.
- Exp. 264S - Investigation on the insoluble constituents of guayule rubber, isolation of insoluble constituent in guayule rubber, (Effect of Caustic in beater washer, effect of same in vulcanization). More work needs to be done to be sure of results. 1927. About 70 pages.
- Exp. 265S - The addition of X-mixture to dry rubber on the sheeting rolls. The best conditions for absorption of X-mixture (wood tar) were with melted X-mixture, hot rolls and warm sheets of rubber; only the sheets broke into pieces so the wood tar was not evenly taken up. March 18, 1927. 10 pages.
- Exp. 267S - The Addition of Wood Tar to Dry Sheets by Painting. Alcohol and aqueous wood tar solutions were tried. March 22, 1927. 5 pages.
- Exp. 266S - Preliminary Study of Moisture Determination on Shrub. Tried out various methods in order to select the best to become the "standard" that would be used from now on. March - July, 1927. 15 pages.
- Exp. 268S - Milling of Calif. Shrub. Correspondence and reports on guayule shrub grown in Calif. 1927 - 1928. About 100 pages.
- Exp. 269S - Effect of Milling with "Huesos". "Huesos" are a mixture of salts obtained as a by-product from the natural salt lakes. No clear-cut results from this experiment. March 16, 1927. 3 pages.
- Exp. 270S - Comparison of Coarse and Fine Crushing. The difference was very small and not statistically significant. May 6, 1927. 6 pages.
- Exp. 271S - The handling of rubber worms for shipment before Paila Treatment. Results of this experiment were all negative. May 30 and June 23, 1927. 3 pages.
- Exp. 272S - The Effect of Sugar and Starch on the Vulcanization of Guayule Rubber. Sugars lower the quality of high quality rubber. May - July, 1927. 11 pages.

- Exp. 273S - Recovery of sinks from water passing through trommels before pailas. Quite a lot of rubber is recovered making it worthwhile to add the steps to recover it. May, 1927. 9 pages.
- Exp. 274S - The aging of guayule rubber after being blocked for shipment. Aging does not seem to cause any deterioration in the blocks of guayule rubber. Mostly test results given. 1927. 74 pages.
- Exp. 275S - Effect of mill dilution upon the quality of rubber produced. Within the limits of efficient mill operation, no marked improvements in quality are possible by the manipulation of the milling conditions. May - August, 1927. 30 pages.
- Exp. 284S - The use of Wood-tar as an anti-oxidant during the drying of guayule rubber. Its use in the laboratory analysis of shrub. Experiments seemed to prove beyond doubt the efficacy of wood-tar as an anti-oxidant during the drying of guayule rubber film. May 8, 1928. 9 pages.
- Salinas Nursery (C. H. C.) Correspondence concerning setting up guayule experiment station at or near Salinas, Calif. December 8, 1922 - June 18, 1925. About 34 pages.
- Exp. 285S²⁸ - Methods of Analysis of Shrub. Effect of time and pressure of steaming before analysis of finely ground, fresh and parboiled guayule shrub of various kinds. April 1, 1929. 5 pages.
- McCallum's Notes on Hybrids. A complete record of all hybrids made (I suppose on guayule but it does not say so). Work started in spring and summer of 1927. About 75 pages.
- 511 - Davis Nursery. Correspondence concerning the seedling guayule beds at Davis, water for them and payment of person attending them. May - July, 1941. 7 pages.
- 513 - Arbuckle, Sacramento Valley, Colusa Co., Calif. Correspondence relating to the land rented from the Arbuckle Land and Orchard Co., Inc. Known as Arbuckle Station and used to grow guayule. November 22, 1926 - October 24, 1929. 66 pages.
- 514 - Moreno. Correspondence and records pertaining to Moreno Station. Some mention of Hemet Station (definitely non-productive). January 1927 - 1933. About 30 pages.
- 515 - Station Maria (Bottles). 1st folder - Correspondence and records concerning the irrigation and other work at stations Maria and Bottles. 1926 - 1931. 2nd folder - Correspondence concerning renting land for Station Maria. 1929 - 1930. About 25 pages.

- 516 - Hemet, Riverside Co., Calif. Correspondence and records concerning Hemet Station, 1927 - 1931. 6 pictures of Hemet. About 28 pages.
- 517 - King City, Monterey Co., Calif. Correspondence and reports on King City Station. 1 sheet of pictures dated May 3, 1928. 1927 - 1932. About 25 pages.
- 536 - Tustin (group of 4 stations). Correspondence, records (including lease) and other information about Tustin Station. Also, maps of plots. 1930 - 1931. About 20 pages.
- 245 - Pearsall, Texas. Correspondence pertaining to the Texas experiments on guayule growing. 1929 - 1932. About 30 pages.
- G3 - San Jacinto, Calif. Correspondence concerning guayule plantings at San Jacinto and also a planting on the hillside about 4 miles from San Jacinto which had not had any care since planting six year ago - plants healthy but smaller than in other San Jacinto planting. 1918 - 1925. 11 pages.
- G2 - Bernardo - San Diego Co. Correspondence concerning guayule plants at Bernardo set out in 1922. Gophers caused loss of many plants. 1922 - 1924. 10 pages.
- 509 - Woodland, Yolo Co., Calif. Woodland Station abandoned fall of 1927 (clay soil too heavy). Correspondence concerning several stations to be abandoned. 1926 - 1932. 24 pages.
- 510 - Dos Palos (Armstrong) abandoned. The lease, plant counts and planting plans and correspondence related to Dos Palos (Armstrong) Station. Abandoned January 7, 1929. 1928 - 1929. About 20 pages.
- 511 - Red Bluff, Sacramento Valley, Tehama Co., Calif. Correspondence, lease, reports of growth, and finally abandonment of Red Bluff Station. One newspaper clipping about below average rainfall and dates of frost, etc. 1926 - . 25 pages.
- 512 - Suey Ranch. Correspondence concerning the 10 acre Suey Ranch Demonstration plot. The guayule grew very well here even with no care for a four year period. Only damage was from cattle browsing. Copy of lease. 1928 - 1936. About 60 pages.
- 519 - Irvine, Orange Co., Calif. Correspondence, records of plantings, condition of fields, samples taken relating to Irvine Station and Irvine Lease. 1928 - 1937. About 75 pages.

- 520 - Bardin, Monterey Co., Calif. Lease and cancellation order for the Bardin plot. Also, records of planting and growth of the guayule planted there. 1927 - 1930. About 18 pages.
- 522 - Shafter, Kern Co., Calif. Correspondence and all kinds of records pertaining to Shafter Station. 1927 - 1932. About 100 pages.
- 523 - Hebronville, Texas. Correspondence, lease, records of plantings and hybrids used for the Hebronville Station. 1931 - 1937. 43 pages.
- 523 - Artois. This station planted in 1928 and 1929, was abandoned in fall of 1929. The 1929 guayule plants succumbed to grasshoppers. 1927 - 1929. 12 pages.
- 523 - Orland. Correspondence, records, leases and cancellation, planting diagrams for the Orland Station, Calif. 1926 - 1930. 26 pages.
- 524 - Montpelier. Correspondence, records (including yield records for var. 130 planted 1928) for Montpelier, Calif. Station. Also, 1 picture and 2 negatives of Montpelier #1, June, 1930. 1928 - 1932. About 40 pages.
- 525 - Pearsall, Texas. Correspondence and records pertaining to the Pearsall experimental station. 1928 - 1932. About 200 pages.
- 525 - Willows, Glenn Co., Calif. Correspondence and records of work at Willows Station. Discussion of grasshopper problem and poison bait and turbines. 1926 - 1927. About 90 pages.
- 525 - Dos Palos (Irvine). Lease (March, 1928), cancellation (October, 1928), correspondence and 7 photos, and other records. 1928. 35 pages.
- 526 - Montpelier #2. Correspondence, lease and cancellation, planting records and one photo and negative of Montpelier #2. 1928 - 1932. 24 pages.
- 527 - Snelling, Calif. Correspondence, crop reports, plant counts, records of labor costs. Lease signed January 1, 1928 and project cancelled August 24, 1932. 1928 - 1932. 45 pages.
- 528 - Lockford, Calif. Lease and cancellation (March 1, 1928 - November 1, 1930). Correspondence, plant counts, and other records for station. 1928 - 1930.
- 528 - Hebronville #2. Lease and cancellation (February 21, 1931 - January 31, 1933.) Correspondence and records. One small section of this plant-

ing was made among small weeds and was to be left unweeded and uncultivated. 1931-1933. 10 pages.

- 529 - Hebronville #3. Lease and cancellation (February 21, 1931 - January 31, 1933). Planting records. 6 pages.
- 529 - Madera. Lease and cancellation (January 1, 1929 - January 1, 1931). Planting records, crop reports, and correspondence. 1928 - 1930. 30 pages.
- 530 - Hoover, Wasco, Calif. Lease (January, 1929). Newspaper clipping about guayule being grown on six acres of Pres. Hoover's farm. Correspondence. Planting reports, crop reports. 1928 - 1934. About 60 pages.
- Tuling, Texas. Correspondence concerning planting of hybrid guayule plants at Tuling, Texas. 1931 - 1933. 11 pages.
- 531 - Artois #2, Calif. Lease and cancellation (December 29, 1928 - October 22, 1929). Correspondence, planting report, and plant counts. 1928 - 1929. 17 pages.
- 532 - Dilley, Texas. Correspondence, leases, and renewals, work and planting records. 1930 - 1942. About 40 pages.
- 532 - Greenfield Station. Lease and cancellation (April 14, 1929 - May 7, 1929), map of station area, planting records - April 12 0 23, 1929. No reason given for abandoning station. 1929. 23 pages.
- 533 - Linn, Texas. Lease (February 1, 1930). Decided to abandon Linn Station October, 1930 because of poor stand of plants (prime cause of failure was root rot). 1930 - 1931. 20 pages.
- 534 - Marinette Station, Maricopa Co., Arizona. Lease and cancellation (February 6, 1929 - June 1, 1932). Analysis showed low rubber content of shrubs grown at Marinette so station was abandoned. Correspondence and reports. December 28, 1928 - . About 125 pages.
- Edison on guayule. Letters from Edison to C. A. Carnahan boasting guayule rubber and also that obtained from goldenrod. Also, letter from Carnahan to members of the Board of Intercontinental Rubber Co. 1927. 9 pages.
- 6B1 Nursery Rubber Estimates (Production Cost Estimates). Cost figured per year and per cycle (4 years). 1920 - 1927. 17 pages.

- 500 Series - Texas General. Correspondence concerning the Texas stations and their problems (mainly root rot) and whether to enlarge the scope of operations in Texas. 1928 - 1938. About 125 pages.
- 500 Series - Texas Planting. Correspondence and planting records for the Texas stations. 1930 - 1935. About 130 pages.
- Picayune, Mississippi. Correspondence concerning guayule plantings in S.C., Ga., and especially Miss. 1927 - 1928. 8 pages.
- Tifton Station, Tifton, Ga. Correspondence, planting and plant records of Tifton Station. 1927 - 1931. 30 pages.
- Windsor Station, Windsor, S. C. Windsor Station was abandoned February 18, 1928 - plants all froze in record low temperature of 8° F above zero. 1927 - 1929. 6 pages.

- Exp. 259S - The Conditioning of Shrub, Wood Tar Treatment of Green Shrub, Deleafing and a Study of Acidity in the Plant. Experiment to determine how much effect various methods of treating the shrub had on the final product. 1926 - 1929. 132 pages.
- Exp. 286S - Analysis of Shrub (Cedral Shrub, Salinas Shrub). Also, analyzed young plants of Hevea rubber, chrysanthemum plants from Nevada, and cryptostegia from Calif. and Fla. Mostly analysis of guayule shrub from different locations. 1916 - 1932. About 100 pages.
- Exp. 286S - Analysis of Shrub - Continued. More correspondence and analysis data for guayule rubber. Also, copies of some letters and reports that are in previous folder. 1927 - 1942. About 175 pages.
- Exp. 287 - Bagasse Analysis. Catorce - "La Trueba" shrub used for most of this experiment. 1929 - 1930. 25 pages.
- Exp. 292S - On the Conditioning of Field Shrub for Milling. Various methods of drying shrub prior to milling (sunning, oven drying, sweating, etc. on whole or crushed shrub). 1927 - 1930. About 110 pages.
- Exp. 293 Ce & S. Experiment of milling with hot water. Control lot milled with cold water gave 2.6% better extraction. 1928 - 1930. 32 pages.
- Exp. 293S - Experimental Milling of Shrub. Milling was done in a small mill using only 200 pounds of flint pebbles. Different factors such as length of time, water temperature, steaming, sweating, sea water were tried. 1926 - 1931. About 50 pages.
- Exp. 293 - Continued. Original record sheets on sections of experiment written up in other folders. 1928 - 1931. About 90 pages.
- Exp. 293S - Continued. Copies of Salinas experiments already seen in other folders. 1929 - 1931. About 40 pages.
- Exp. 294S - Experiment on the Milling of Guayule Shrub with Vulcanized Rubber Elements as Milling Agents. These experiments checked on the abrasion losses in milling of pebbles, lead balls, rubber coated lead balls, etc. Copies of past experiments included in folder. 1929 - 1930. About 225 pages.
- 294S - Continued. Correspondence concerning this experiment and copies of reports in previous folder. 1921 - 1931. About 150 pages.
- Exp. 294 - Continued. More results in table form. Also, copies of reports in other folders. 1929 - 1930. 192 pages.

- Exp. 294 - Continued. More copies of reports as well as original record sheets for some parts of experiment. 1929 - 1930. About 170 pages.
- Exp. 294 - Continued. Original record sheets as well as copies of others. 1929 - . About 100 pages.
- Exp. 294S - Continued. More variations in this experiment (such as, more studies on mill speeds). Also, copies of parts of experiment in other folders. 1929. About 175 pages.
- Exp. 295S - Methods for the Utilization of Bagasse from Guayule. Copies of correspondence concerning possible uses of bagasse as insulator blocks, low grade paper, etc. Also, letters about a different type mill (Wiley Mill). 1928 - 1931. 31 pages.
- Exp. 296S - Studies on the Autolysis of Shrub. Experiment tries to answer many questions which affect the quantity and quality of rubber produced from guayule shrub. Also, correspondence concerning same. 1928 - 1929. About 200 pages.
- Exp. 296 - Continued. Further work on autolysis of shrub. (Effect of steaming time, of acidity and alkalinity, of age of shrub, of drying, etc.) 1928 - 1929. About 115 pages.
- Exp. 297S - Experiment devoted to the study of the function of the rubber in the plant. 1930. 8 pages.
- Exp. 297S - Continued. Same material as in previous file except for one handwritten note concerning the irrigation. 1930. 9 pages.
- Exp. 298S - Results from spacing of plants. Closer spacing seemed to increase rubber content of plants. 1931 - 1932. 28 pages.
- Exp. 299S - Studies in the seasonal changes in the Rubber content of guayule shrub. Rubber content falls off in the spring (as it grows) and increases in fall with approaching dormancy. 1929 - 1932. 26 pages.
- Exp. 299S - Seasonal changes in the rubber content of guayule shrub. Effect of defoliation. 1930 - 1932. 12 pages.
- Exp. 300 - Curing by smoking as applied to Field Shrub. Two purposes: to fully coagulate rubber in shrub and to reduce moisture in shrub. Original records of tensile tests. 1928 - 1929. About 100 pages.

- New Mexico - Correspondence concerning available land in New Mexico if any were needed. 1927. 8 pages.
- 518 - Soledad, Monterey Co., Calif. Lease and cancellation (Jan., 1927 - Nov., 1930). Planting records and plant counts, also correspondence. One picture of Soledad Station. 1927 - 1930. 27 pages.
- Southeastern States (S. C., Ga., Fla., Miss.) - Correspondence reporting on the various S. E. Stations. 1926 - 1927. 42 pages.
- Utah - Correspondence regarding land for guayule trials in Utah. 1927 - 1931. 19 pages.
- Other states and territories - Correspondence by people interested in the growing of guayule (Eritrea, Abyssinia, Nevada, Idaho). 1928 - 1930. 13 pages.
- Laboratory Mill Tests - Milling test records, original and one copy. 1928. About 225 pages.
- Laboratory - old file. Notes on rubber samples, analysis results of work at Valley View, Davis, Salinas. Also, correspondence. 1922 - 1928. 45 pages.
- G-4 - W. B. McCallum General Reports. About planting, acquiring land, milling, sampling, and many other aspects of his work. 1935 - 1942. About 225 pages.
- EIA - Correspondence, 4 pictures, and newspaper clippings concerning the first tires made entirely of guayule rubber. Also, a copy of reprint by D. Spence, Cultivation and Preparation of Rubber in U. S. 1926 - 1930. About 30 pages.

- Correspondence, mainly 1934 - 1936, 100 pages.
- Laboratory experiments, Sept., 1934 - Nov., 1935 and discussions. H. Boucher - C. N. Carnahan. About 150 pages.
- Records. Experimental work, Salinar 1936. Records, discussion and correspondence. About 125 pages.
- Laboratory, Exp. 209 - special analysis of Salinas ampar Lot 103. Control records from Factory Shrub Storage Bins. Exp. 293S - milling of shrub, effect of moisture. About 50 pages.
- Exp. 209 - Catorce. Routine analysis on Catorce shrub. Includes original records of the various experiments. April 1929 - 1930. About 200 pages.
- Exp. 209-S-continued. Copies of some of the experiments from the previous folder. About 30 pages.
- Exp. 209-continued. Mostly copies of material in previous folders. About 250 pages.
- Exp. 225 - Preparation of shrub for milling. Use of dry pressure or dry squeezing on various types of rolls and in the Robinson attrition mill. Comparison of wet and dry crushing and of hot and cold pressing. 1930 - 1931. About 150 pages.
- Exp. 228S. Work on worms of various treatments: Direct addition of Trimene base; soaking in wood tar solution; application of anti-oxidant; dewatering of worms; etc. 1930 - 1931. About 60 pages.
- Exp. 230 - Air Drying Worms (wood tar). Comparison of brass and iron screen trays for use in the drier. 1929. 2 pages.
- Exp. 231 - Floatation. In contrasting the effects of small and large mills in milling mixed shrub samples, it was noticed that in the large mill the rubber worms floated whereas in the small mill they sank. Except for an increase in "insoluble matter" in the small mill sample there was very little difference. April 2, 1929. 1 page.
- Exp. 231-continued. Copy of exp. in previous folder. 1929. 1 page.
- Exp. 232 - Worms, Retting, and other treatment. Correspondence concerning worm retting experiments. Also, reports on improving the quality of guayule rubber. 1938. About 70 pages.

- Exp. 237S - Study of Insolubles (Impurities in guayule rubber) and Practical Means for Removal of Same. Correspondence and reports on the experiments done. 1927 - 1930. About 250 pages.
- Exp. 238S - Insolubles in Guayule Rubber. Investigation in the method of estimating the insolubles in guayule rubber. May 20, 1929. 11 pages.
- Exp. 242S - Lab. Paila. Study of extraction losses resulting from Paila sinks. June 23, 1930. 7 pages.
- Exp. 246S - Extraction of "Lush" Shrub; Effect of Leaf Tops on Yield, etc. Causes of low factory extractions on lush shrub. "Lush" shrub has an unusually large proportion of leaves, branches, and other non-rubber containing parts. October 7, 1926. 2 pages.
- Exp. 249S - Exp. on Deleafing of Shrub and Study of Acidity in the Plant. This study includes the composition of guayule leaves. 1927 - 1929. About 80 pages.
- Exp. 250S - The Addition of Wood Tar and Falty Acid as X-mixture in Beater Washer. Tests and re-tests on various batches of shrub. 1926 - 1935. About 85 pages.
- Exp. 251S - Cedral Tests on Milling in the Presence of Wood Tar and Caustic Soda. These (wood tar and alkali) seem to be very essential elements to the uniform vulcanization of this rubber. 1926. 6 pages.
- Exp. 252S - Addition of Stearic Acid in the Beater Washer after Wood Tar and Caustic Soda in the Mill. Experiments done on shrub from different stations. 1926 - 1927. 25 pages.
- Exp. 253S - The Determination of Moisture in Guayule Rubber for Purpose of Factory Control. Correspondence and report on experiment. 1926. 8 pages.
- Exp. 254S - Comparative Effect of Wood Tar, Micronex and Stearic Acid upon Rubber Milled in the Presence of Caustic. Report and correspondence concerning same. 1926 - 1927. 11 pages.
- Exp. 255S - Effect upon Tensile Strength of Ageing Rubber for Short Periods of Time in the Worm Stage. Oxidation seemed to have no effect on tensile strength. 1926 - 1930. 10 pages.
- Exp. 256S - The Coagulating Effect of Acetic acid Added in the milling of Guayule Rubber. All the products of this experiment were poor rubber, soft and dead. 1926. 14 pages.

- Exp. 257S - The Effect of Caustic Added in the Milling of Shrub and in the Paila Treatment of Worms. Report on effect of the caustic upon extraction, acetone extract, insoluble matter, and tensile strength. 1926 - 1928. 27 pages.
- Exp. 258S - Comparative Tests on Washed and Unwashed Shrub. Results showed that the values for yield, tensile strength and acetone extract are all equal within the experimental error. 1927. 8 pages.
- Exp. 287S - The analysis of Bagasse. Analyzed bagasse samples for rubber, nitrogen and potash. Much correspondence regarding fiber board manufacturers who might use guayule bagasse. 1927 - 1941. About 150 pages.
- Exp. 288S - Staining of Rubber in Situ. Use of Carotin, alkanet and Sudann III as dictated by Prof. F. E. Lloyd. September 16, 1927. 1 copy sheet.
- Exp. 290S - Essential Oil of Guayule. Letter from Mr. Carnahan about oil of guayule. No reports on file of Exp. 290S, but Mr. C. figures there should be work on this. May 28, 1930. 2 pages.
- Exp. 291S - Milling tests on the Parboiling of Shrub. Tests on shrub aged for varying lengths of time before boiling - all test results given. Also, copy of Exp. 225S¹³. 1929. About 100 pages.
- Exp. 291S - continued. More results and some copies of material in preceding folder. 1929. About 50 pages.
- Exp. 292S - Conditioning of Field Shrub for Milling. High temperature drying; coagulation vs. desiccation as the controlling factor in agglomeration; rate of sun drying in February; effect of oxygen in sweating of shrub; sweating under different conditions; etc. 1929 - 1931. About 100 pages.
- Exp. 292S - Continued. Analysis of shrub from different stations; correspondence and copies of material in preceding folder. 1929-1931. About 175 pages.
- Exp. 300S - Curing by Smoking as Applied to Field Shrub. Immediately coagulating the rubber in the shrub after cutting is desirable and smoking seems to do this. Reports and correspondence concerning this procedure. 1928 - 1930. 71 pages.
- Exp. 301S - Cutting vs. Pulling in the Harvesting of Shrub. Under present methods of farming there seems to be little advantage to yearly cutting of shrub. Correspondence and reports. 1928 - 1932. 30 pages.

- Exp. 301S - Cutting vs. Pulling - Continued. Original records and copies of work. 1931. About 25 pages.
- Field Average Data. Santa Reta Lease data. Also, Litchfield Station, Ariz. Also, copy of process for coating lead balls. 1929. 11 pages.
- Exp. 302S - Observations on the formation of an insoluble modification of guayule rubber and some characteristics of the same. 1929. 11 pages.
- Exp. 302S - Continued. Copy of material in previous folder. 1929. 11 pages.
- Exp. 303S - Field control Records on Plant Growth and Rubber Content - Calif. & Texas. Mainly field records, some for Litchfield Station. 1930 - 1942. 50 pages.
- Exp. 303S - Continued. Correspondence and field records for abandoned stations and current checks on Calif. Stations. 1929 - 1932. About 100 pages.
- Exp. 303S - Continued. Correspondence, field records for Lease 1 fields. 1929 - 1930. About 150 pages.
- Exp. 303S - Continued. Some records for Pearsoll, Texas. 1929. About 40 pages.
- Exp. 303S - Continued. Correspondence and records pertaining to Litchfield Station. 1930. About 40 pages.
- Exp. 303S - Continued. Correspondence and reports for Irvine Station. 1930. About 25 pages.
- Exp. 303S - Continued. Field records on plant growth and rubber production for Orland Station. 1929. 7 pages.
- Exp. 303S - Continued. Records for Santa Maria Station. 1929. 4 pages.
- Exp. 303S - Continued. Records, in field planting diagram for Santa Maria Station. 1928. 23 pages.
- Exp. 303S - Continued. Records for Santa Rita lease. 1930. About 75 pages

- Exp. 303S - Continued. Records for Spence tract. Also, 1 sheet giving results of irrigation on 3 yr. old plants. 1932. 26 pages.
- Exp. 303S - Continued. Records for Hurt Lease 1928 planting. Also, land diagram. 1928. About 35 pages.
- Exp. 303S - Continued. Records for Camphora District, also land diagram. 1928 - 1929. 19 pages.
- Exp. 303S - Continued. Records for Montpelier Station #1. 1932. 18 pages.
- Exp. 303S - Continued. Records for Battles Lease - 1929 planting. 1929. 4 pages.
- Exp. 304S - The Manufacture and Testing of Rubber Covered Milling Elements. Rubber balls are used in the factory scrubbing mill. 1929 - 1930. 200 pages.

Hevea

- 1/41. Mazatenango Guatemala. Dr. Theodore J. Grant and Carl. D. La Rue of the U. S. D. A. survey party inspecting a nursery of Hevea brasiliensis.
- (Negative). Distribution of Heavea leaf blight in Northern Latin America determined by U. S. D. A. RPI, 1940.
- Published in Agric. in the Americas (May 1941), "Why Rubber is Coming Home," Blandin.
- Hevea brasiliensis. Two branchlets, one with corolla completely removed from male and female flower, the other with corolla partially removed from a male and female flower.
- Hevea brasiliensis. Portions of two branchlets, each with an open female flower at tip and one with an open and unopened male flower on the side; male buds and flowers removed from other branchlet.
- Hevea - disease. (9 prints).
- View of small planter's type sheet factory and smokehouse. Speedway Estale, Cairo, Costa Rica. From W. E. Klippert, 9/18/41. Taken by W. E. Klippert or photographer in San Jose, Cairo.

Cryptostegia

- Crytpostegia negatives, sent in by Mr. Gentry, 9/42.
- Dr. Dolley, Mr. Polhamus and Dr. Prandes examining Cryptostegia pods, Washington, 7/17/42, Press Service.
- TB- "Contribution to the morphology and anatomy of Cryptostegia, etc." Figure 2. A, median longitudinal section of the apical dome. X 610. B, median longitudinal section of part of apical dome, showing localized periclinial divisions in second and third corpus layer. X 760. lp, 160u level. The first protoxylem (px) and the first latex cell (l) differentiating. X 655. D, cross section through base of second leaf primordium, showing first protophloem (pf) sieve tube (s) and a massing of latex cells. X 630.
- TB- "Contribution to the morphology and anatomy of Cryptostegia, etc." Figure 1. A, transverse section through foliage leaf bud at level of a- pical dome. X 47. B, longitudinal section through apical dome of shoot. X 225.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc."
Figure 13. A, radial section through stem, showing the course of a latex cell in its passage from the pith to the cortex. X 220. B and C, tangential section through xylem, showing latex cell (l), in fusiform ray, and in uniseriate ray. Each X 310.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc."
Figure 14. A, tangential section through bark, showing two groups of fibers separated by a narrow band of highly pitted parenchyma cells. X 350. B, dissected fibers, showing peculiar constriction of the lumen. Only part of fiber is shown, X 250. C, cross striation in wall of fibers. X 850.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc."
Figure 3. A, transections through upper buttress of primordium. A No. 2. X 190; B No. 3. X 150.
- Figure 4. A, procambium groups, one with two mature sieve tubes (S). X 750. B, vascular tissue of fourth internode. Degeneration of oldest sieve tube (ds) in outer phloem, and progressive blocking out of inner phloem (iph) groups. X 750.
- TB -"Contribution to the morphology and anatomy of cryptostegia, etc."
Figure 5. A, transection through lower buttress of the fourth primordium. No. 4. Large latex cells (l) cut longitudinally at periphery of outer phloem. X 775. B, transection through vascular tissue of leaf No. 5, showing latex cell (l) and resin cells (r). X 620. C, transection of vascular tissue of leaf No. 6. X 775.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc."
Figure 6. A, transection of third leaf base, showing origin of glandular hairs, X 190. B, transection through third visible internode, showing endodermis, cambium, and latex cells (l). X 350.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc."
Figure 7. A, transverse section through vascular tissue of young stem, with two latex cells cut (l) longitudinally. These cells in passing from pith to cortex make a right-angle turn from the vertical and after entering the cortex resume their vertical course. B, transverse section through the outer phloem of the third visible internode, showing a massing of latex cells (l) in the parenchyma between the groups of fibers as far inward as the cambium. All X 345.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc."
Cross section apical pith of stem showing starch-filled parenchyma, latex cells with content, and empty latex cells. X 310. B, longitudinal section through flank of third internode, showing numerous nuclei in latex

cell. X 820. C, longitudinal section through flank below apical dome, showing pointed tip of latex cell as it pushes its way through the tissue. Note the rapid widening of the bore of the latex cell. X 820. Figure 8.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 9. A, transverse section through eighth internode. X 50. B, transverse section through eighth internode of another plant, showing initiation of periderm. X 65. C, Enlarged view of secondary xylem, showing structural detail. X 355.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 10. A and B, transection of stem with stomate (st) slightly depressed. X 240. C, stomate (st) protruding prior to lenticel formation. X 240. D, section through pith, showing ordinary pith cells (p) and latex cells (l). X 240. E, mature lenticel. X 145.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 11. A, initiation of periderm in hypodermis of stem. X 250. B, and C, division in phelloderm cell. A crystal of calcium oxalate, is contained in each of the network. X 450. D, tangential section through phelloderm cell filled with crystals. X 250. E, stone cell jacket differentiated from first-formed phelloderm. X 250.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 12. A, cambium in tangential view. X 295. B, xylem in tangential view, showing vessels (v), fiber (f), and rays (r). X 345.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 16. A, crystals of calcium oxalate in parenchyma of outer secondary phloem photographed with polarized light. X 330. B, inner phloem group, showing groups of sieve tubes (s) not all of which have companion cells; note pseudocambium above sieve tubes. X 855. C, transverse section through cambium and part of secondary outer phloem. Large medullary ray cells divide the phloem into narrow radial sectors. X 950.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 17. A, large inner phloem group from eight internode. Sieve tubes are unusually large with sieve plates (sp) and heavy wall thickening. X 875. B, another still larger inner phloem group with two very large thick-walled sieve tubes and sieve plates (sp). All X 875.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 18. A, sieve tube (s) from outer phloem with degenerated nucleus and spherical body. B, sieve tube with companion cell, horizontal sieve plate (hsp), and crystal-bearing phloem parenchyma (cbpp). C, sieve tube with sloping sieve plate (ssp) (tangential section). D, sloping sieve plate with four sieve fields (sf) in surface view (radial section). All X 835.

- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 19. A, tangential section through youngest secondary phloem of old trunk. Two latex cells (l) are in the large fusiform ray. X 175. B, cross section through active secondary phloem of old trunk, showing sieve tubes (s) and companion cell (c). X 425.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 20. A, vein distribution in young leaf (X 29). B, C, grandiflora. S 30. D, surface view of lower epidermis (C.grandiflora). E, (hybrid). X 500.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 21. A, cross section of lamina of mature leaf. X 220. B, partial cross section of lamina, showing small semi-amphicribral (sab) bundle. X 375.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 22. A, cross section through lamina. A young leaf, showing large latex cells (l) on adaxial and abaxial side of young bundle. X 695. B, somewhat older leaf, showing similar appearance of the cells of the upper epidermis and the palisade parenchyma. X 650.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 23. A, cross section through young rootlet, showing pentarch primary xylem plate. X 750 R, phloem. B, cross section of young lateral, showing origin of periderm. X 355.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 24. A, cross section of small lateral, showing the relatively broad periderm. X 105. B, cross section of larger lateral. X 30.
- TB- "Contribution to the morphology and anatomy of cryptostegia, etc." Figure 25. A, cross section through secondary phloem of large lateral. X 425. B, cross section through secondary phloem of stem showing latex cells with black stain. X 310.
- 10 year old cryptostegia vines climbing over porch of office building at Bard Exp. Sta. Soil is well watered and fertilized. Growth is vigorous and latex fluent. Two lb. sample requested sent to McMullan for analysis. (1a)
- Cryptostegia 10-12 yrs. old on water tower at Bard station near Yuma. Top of tank is 50 ft. above ground. (1b)
- Cryptostegia vines left to the mercy of the arid Yuma climate on abandoned experimentation farm near Bard, CA. They were vines climbing over the ramada. (2a)

- Santa Engracia, Tamps. Trunk of old *cryptostegia grandiflora* vine along fence near river. Probably parent of escape population adjacent. (2b)
- Llera, Tamaulipas, Mexico. 1/15/43. Constructing wind breaks. Tar paper pots in left foreground. (3a)
- Llera, Tamaulipas, Mexico. 2/1/43. Seed beds. (3b)
- Llera, Tamaulipas, Mexico. 2/25/43. Tar paper pots size 2 x 4 inches. (4a)
- Llera, Tamaulipas, Mexico. 3/2/43. General view of *cryptostegia* seed beds. (4b)
- Llera, Tamaulipas, Mexico. 3/1/43. Seed beds. (5a)
- Llera, Tamaulipas, Mexico. 3/1/43. Seed beds. (5b)
- Llera, Tamaulipas, Mexico. 3/1/43. Close-up of seed beds. (6a)
- Llera, Tamaulipas, Mexico. 3/1/43. Close-up of seed beds. (6b)
- Llera, Tamaulipas, Mexico. 3/1/43. Wind injury. Bed in foreground has just been watered. (7a)
- Llera, Tamaulipas, Mexico. 3/1/43. Wind injury. Note thicker stand and increased growth of seedlings close to wind break. (7b)
- Llera, Tamaulipas, Mexico. 3/1/43. Wind injury. (8a)
- Llera, Tamaulipas, Mexico. 3/1/43. View of part of 20 A plot being prepared for *cryptostegia* planting. Stakes in foreground indicate various transplanting treatments. (8b)
- Llera, Tamaulipas, Mexico. 3/1/43. View of part of 20 A plot. (9a)
- Ciudad Victoria, Tamaulipas, Mexico. 3/1/43. Project headquarters. (9b)
- Llera, Tamaulipas, Mexico. March, 1943. Seed-beds of C. grandiflora. Windbreak gave good protection of these beds. (10a)

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Photos and negatives

- Llera, Tamaulipas, Mexico. March, 1943. Seed beds. Note larger growth of C. grandiflora near "wind-break". (10b)
- Llera, Tamaulipas, Mexico. March, 1943. Potted plants of C. grandiflora. (11a)
- Llera, Tamaulipas, Mexico. March 15, 1943. Seed beds of C. grandiflora. Planted about Jan. 1. (11b)
- Llera, Tamaulipas, Mexico. April, 1943. "Wild" cryptostegia being examined for Texas root rot by F. J. LeBeau. (12a)
- Llera, Tamaulipas, Mexico. April, 1943. View of 20 acre area ready for planting with cryptostegia. (12b)
- Municipio Otaes, Durango, Mexico. April, 1943. On steep slopes in background some of best stands of highland chilte trees were found. C. L. Lundell. (13a)
- Municipio Otaes, Durango, Mexico. Tree tapped with amazonas knife: yield 230 cc. This tree had been bled 11 times by slash method in October - December, 1942. Note slash cuts on side. The amazonas knife removes a very narrow strip of the cortex, and it is very satisfactory. C. L. Lundell. (13b)
- Municipio Otaes, Durango, Mexico. April, 1943. Cucaracho tree tapped by slash method; note pan for collecting latex. C. L. Lundell. (14a)
- Municipio Otaes, Durango, Mexico. April, 1943. Front view of tree tapped with amazonas knife: yield 230 c. c. C. L. Lundell. (14b)
- Municipio Los Remedios, Durango, Mexico. April, 1943. Tree tapped vertically with wide gouge. Operations of Sr. Juan Pereda. Note the wide strips of cortex removed. Manuel Itie. (15a)
- Tomate, Durango, Mexico. April, 1943. Blocks of crude highland chilte stored in water to prevent loss of water pending delivery. Manuel Itie. (15b)
- Tomate, Durango, Mexico. April, 1943. Press used for removing excess water from highland chilte. C. L. Lundell. (16)
- Llera, Tamaulipas, Mexico. April, 1943. Defoliated condition of "wild" cryptostegia. (17a)

- College Station, Texas. One row of cryptostegia (hybrid from cuttings from Coconut Grove, 1363). Dr. E. B. Reynolds letter 6/30/43. (17b)
- Close-up of the vines over the office porch. (2 prints) (18)
- Cryptostegia photographs sent in by Mr. Gentry, 9/42. (19a)
- Santa Engracia, Tamps. Cryptostegia grandiflora along the river. (19b)

- Negative. Map of Lancetilla Farm, Tela, Honduras.
- Negative. Tapping. Honduras.
- T-90, Allard. Site of Station, Turrialba, Costa Rica.

Photos used for pub. in Nat. Hist. Mag., 1944. (Kok-saghyz, guayule & hevea):

- Chemist Constantine Ricciuti determines the rubber content of Russian dandelion (Kok-saghyz) in the Eastern Regional Research Laboratory of the U. S. Dept. of Agriculture, Philadelphia, PA. Purdy, 1942.
- Party No. a of specialists selected by the Sec. of Agriculture to study rubber production in Tropical America, which sailed for Honduras on July 31, 1940. Left to right: Dr. T. J. Grant, Dr. Mark Baldwin, Dr. T. D. Mallory, and R. E. Stadelman. In the center is part of a rubber tree, from which rubber has been taken by tapping. Purdy, July, 1940.
- Mrs. Hadfield, Div. of Rubber Plant Investigations, U. S. Dept. of Agriculture, tries to read the Russian shipping tag on a 50-pound sack of Russian dandelion seed which reached Washington, D.C., from Kuibyshev, U. S. S. R., in May, 1942. Purdy.
- Harry Baucher, head chemist for the Intercontinental Rubber Producers, Salinas, CA, runs rubber extraction tests on guayule. Lee, December, 1941.
- Miss Anne Whitman, Rubber Plant Investigations, Bur. of Plant Industry, U. S. Dept. of Agriculture, holds two cultivated guayule shrubs. These shrubs, grown in CA, are a little more than 3 years old. In the cells of their branching stems and their branching roots is about a pound of rubber. Forsythe, December, 1941.

- "Worms" the form that guayule rubber takes after being chopped and crushed and put in settling tanks, Salinas, CA. December, 1941, Lee.
- Dr. E. W. Brandes, in charge of Rubber Plant Investigations, U. S. Dept. of Agriculture, examines Russian dandelion seed spread out to dry after it has been soaked in cold water to promote germination. This seed, which reached Washington, D.C., by air from Kuibyshev, U. S. S. R., in May, 1942, will soon be ready to plant in one of the greenhouses at the Beltsville Research Center. Purdy, May, 1942.
- U. S. Dept. of Agriculture staff directing rubber studies in Tropical America by specialists selected by Sec. of Agriculture. Left to right: L. G. Polhamus, Dr. E. W. Brandes, and Dr. R. D. Rands. Purdy, July, 1940.
- Gathering guayule seed by means of vacuum, Intercontinental Rubber Producers, Salinas, CA. December, 1941, Lee.
- Sorenson, negatives of maps of potential rubber areas by Sorenson. May, 1941. 3 maps of Venezuela and one of Colombia.
- A kok-saghyz plant, 65 days after planting. Burlington, Vt.
- The biology and tax peculiarities of kok-saghyz and non-rubber-bearing dandelions by Korolova. Russian photostat. Original negative.
- First planting of kok-saghyz in U. S. Planted at Beltsville, MD. May, 1942, Brandes and Nuttonzon.
- May, 1942. Kok-saghyz seed being stratified at temperatures of 32°-36°F. Kept moist. Rands and Brandes.
- Kok-saghyz seedlings infected by root knot nematodes. Negatives filed in Div. of Nematology. Mr. Polhamus private copy.
- A kok-saghyz plantation conducted under the direction of the All-Union Rubber Plant Institute of the U. S. S. R.
- Bridgeton, New Jersey. Field of dandelion (Arlington Thick Leaf) planted 9/1/40 and never seeded. Close-up. 5/1/42.
- Line negatives, general maps of Colombia, Sorenson.

Uraba Region:

- Leaf-blight resistant, 5 months old seedlings in the Villa Arteaga Nursery, Uraba, Colombia.
- Leaf-blight resistant clones in the Villa Arteaga Budwood Gardens, Uraba, Colombia.
- Clearing forest for cooperative hevea nursery by boys of church agricultural school, Riogrande, Uraba, Colombia.
- Map of Uraba Region, Colombia, South America.

Technical Bul. No. 65.

Bolivia: (Butler's pictures)

- B-29. Our cook on the "llth de Octubre" preparing lunch. El Beni, Bolivia. November, 1940.
- B-30. The "llth de Octubre" on which we traveled from Nacebe to Cachuela Esperanza, Bolivia. November 12-17, 1940.
- B-31. Typical type of tapping done on properties of Suarez Hrns. in Bolivia. November 15, 1940.
- B-32. El Beni, Bolivia. November, 1940.
- B-33. Loading Suarez rubber on the Rio Beni, Bolivia. November, 1940.
- B-34. Climber collecting budwood at Eiba near Nacebe, Bolivia.
- B-35. Large growths on H. brasiliensis at Humaytha, Bolivia. November 15, 1940.
- B-36. Mandioca at Rosario, Bolivia. November, 1940.
- B-37. Climbers hanging from Castana tree near Nacebe, Bolivia. November 15, 1940.
- B-39. Barraca near Hymaytha, Bolivia. November 15, 1940.
- B-40. Climbers hanging from Castana tree near Nacebe, Bolivia. November 15, 1940.

- B-41. Native H. brasiliensis and castana trees in a clearing at Humaytha, Bolivia. November 15, 1940.
- B-42. Native H. brasiliensis in cleared forest near Humaytha, Bolivia. November 15, 1940.
- B-44. Native H. brasiliensis and castana trees in a clearing at Humaytha, Bolivia. November 15, 1940.
- B-45. The "city" bids us a warm goodbye at Bella Flor, Bolivia. November 9, 1940.
- B-46. "Goodbye" at Bella Flor, Bolivia. November 9, 1940.
- B-47. Family of 15 hitch-hiking with us; they were all in a large dugout with all of their belongings on a trip down the Rio Beni, Bolivia. November 16, 1940.
- B-49. Some of the happy family of 15 unloading from dugout to our boat on Rio Beni, Bolivia. November 16, 1940.
- B-50. 15 people unloading from dugout. Rio Beni, Bolivia. November 15, 1940.
- B-51. 15 people in a dugout leaving us on Rio Beni, Bolivia. November 16, 1940.
- B-52. Some of the famous Bolivian "bathroom" budwood at Nacebe, Bolivia. November 13, 1940.
- B-53. Home of Mrs. Nicholas Suarez at Cachuela Esperanza, Bolivia. November 17, 1940.
- B-54. Base of Ficus tree (roots) surrounding palm at Cachuela Esperanza, Bolivia. November 17, 1940.
- B-56. Solares, La Rue, and Zapata at Cachuela Esperanza, Bolivia. November 16, 1940.
- B-2. La Rue "and family" as the town said goodbye at Filadelfia, Bolivia. November 6, 1940.
- B-3. Hauling palm fronds in a dugout to make thatched-roofed houses. Near Nacebe, Bolivia. November, 1940.

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- B-5. A castana (brazil nut) cracking and curing shed. Bella Flor, Bolivia. November 9, 1940.
- B-8. The Tahumanu River in Bolivia more than 2,000 miles from the ocean. November 7, 1940.
- B-12. Seringeiro at Ivon (near Riberalta), Bolivia. Showing latex pan, rubber and other articles in process of manufacture. October 30, 1940.
- B-13. Baggage of La Rue and Butler on way to airport. Santa Ana, Bolivia. October, 1940.
- B-15. Perez, La Rue and Zapata enjoying roast chicken lunch at Eiba (near Nacebe), Bolivia. November 12, 1940. (Picture is missing from page)
- B-16. Eiba, Bolivia.
- B-17. A seringeiro's wife, the only woman in the rubber camp, was giving birth to a child under this mosquito net when the picture was taken. Eiba, Bolivia. November 12, 1940.
- B-18. Eiba, Bolivia.
- B-19. Huts of seringeiros who had just opened up 37 new estradas for Suarez Hnos. at Eiba, Bolivia. November 12, 1940.
- B-20. Preparation of rubber ball in usual manner at Eiba, Bolivia. November 12, 1940.
- B-21. Climber vines in dense woods near Nacebe. November 12, 1940.
- B-26. The boat on which we traveled from Filadelfia to Nacebe, Bolivia. November, 1940.
- B-27. Our boat on Tahumanu River in Bolivia. November 7, 1940.
- B-28. Witches broom on Acacia. Cochabamba, Bolivia. November, 1940.
- B-21. Eiba, Bolivia. (near Nacebe) November, 1940.
- B-22. Eiba, Bolivia. November, 1940.

- B-23. Eiba, Bolivia. November, 1940.

- B-24. Eiba, Bolivia. November, 1940.

- B-25. Eiba, Bolivia. November, 1940.

Brazil:

- Series II. Belterra. Looking west from water tank. 3 prints: (a) October, 1942, (b) March, 1945, and (c) January, 1947.
- Series I. Belterra. Looking east from water tank. 4 prints: (a) October, 1942, (b) 2 on March, 1945, and (c) January, 1947.
- Series III. Belterra. Looking south from sater tank. 1 print: (a) October, 1942.
- Rio Jasi-Parana. Meeting of Jaru and Gy-Parana Rivers (?).
- The Ford School, Belterra. 1945. 2 prints.
- First Rappids Rio Aburra.
- Felix De Lima in which we embark at Costuella Esperanga.
- Rio Paeahuava, Buena Vista, head of navigation.
- Oil prospecting on left bank. Topajos above Itaituba, Brazil, Amazonas.
- R. Madeira, Banks of Alluvial Silth. Near cultrauce to Amazon.
- One of the best Tapajoz seedlings at Fordlandia planted in 1932, located in same group of trees which was top-worked in 1936 with H. guianensis. K. D. Butler, August 16, 1941.
- Native canoe on upper Cupera. The Cupera enters the Rio Tapijos to the south at latitude 3°S. Longitude 55°W. It enters Rio Tapijos from the east but its upper course runs south. It is not over 50 miles long. Its mouth is about 110 miles south S.W. of Sautence on the mouth of the Tapijos River.

- Villa Murtinho. This is on the east bank of the Rio Madeira, $10\frac{1}{2}^{\circ}$ south latitude, $65^{\circ}.60$ west longitude.
- Head of Cupera.
- Falls of the Aburra at Forte Eleza.
- Riberalja, on the R. Beria where it meets the R. Madeira de Slios.
- R. Jasi-Paranha. Meeting of the Jaru and Gy-Parana Rivers (?).
- Lower Amazon. the Narronis, Hevea in foreground.
- Villa Bella, looking at the beach. This was a lively town in the old days when the crews of hundreds of rubber laden battalos were about to shoot. The perilous rappids of the water were just gesturing weary and shaken with toil and disease bringing up their boots over the same rappids after their three years trip to Pana, 1500 miles away, their original numbers reduced by 40% to 60% through malaria and other diseases or lost in the great waters.
- Upper Cupera.
- Cupera.
- Riberalja, Bolivia, we are putting up in a similar place to seat opposite.
- River Alta. The glider.
- Frontier, Brazil, Guajara Mirim, Mato.
- An Indian uplift settlement on the Lower Rio Madeira.
- Where the Beni and Maurone meet to form the Madeira River.
- Lower Amazon, the narrower.
- Limestone on bank of Tapajos just above Itaijuba. Lower Amazon, Brazil.
- First rapids of Aturra River, Lower mid Amazon River. Brazil Boundary.
- Lower Amazon, fueling station.

- Several prints. No legend, Mr. Sorenson, 12/22/48, Brazil.
- Pictures of Belterra Plantations from 1942 to 1947. (From Dr. Langford).
- A-9. Large Moraceae tree being felled at Palmares, Acre, Brazil. January 15, 1941.
- A-10. Felling operations near Palmares, Acre, Brazil. January 15, 1941.
- A-12. Butt of rubber tree felled in Acre (budwood #Acre 11); note large growth rings and old marks from tapping by "machadinho" in previous years. January 15, 1941.
- A-13. Mistletoe (probably *Phthirusa brasiliensis*) on H. brasiliensis. Rio Branco do Acre, Brasil. January 12, 1941.
- A-15. Tapping a virgin H. brasiliensis in the Acre Territory near Palmares. January 15, 1941.
- W-3-4. Tapajoz seedling planted at Fordlandia in 1932; top-worked with H. guianensis in 1936. K. D. Butler. August 16, 1941. (print missing)
- W-3-3. One of the best Tapajoz seedlings at Fordlandia planted in 1932. Located in same group of trees which was top-worked in 1936 with H. guianensis. K. D. Butler, August 16, 1941. (print missing)
- AM-1. Jute on river bank. Villa Amazonas, Brazil. February 9, 1941.
- AM-2. General managers home at Villa Amazonas (Jap colony) on Amazon River, Brazil. February 9, 1941.
- AM-3. Villa Amazonas. February 9, 1941.
- AM-4. Patrons houses at Villa Amazonas. February 9, 1941.
- AM-5. 9 yr. old planted castanha trees with nut balls in top. Villa Amazonas, Amazonas, Brizil. February 9, 1941.
- AM-9. Our launch on the Tapajos trip. Cabral, Maness, Butler and Manifold. February, 1941.

- N-1. One ton of balata in native canoe enroute to Manaos at Mouth of Rio Apuaru, Brazil. March 24, 1941.
- N-2. Mistletoe on Leguminosae tree on shore of Rio Negro, Brazil. March 26, 1941.
- N-3. Hybrid between H. benthamiana and H. spruceana near Acajutuba, Amazonas on the Rio Negro, Brazil, showing that it had been tapped in the boom days with the machadinho. (Budwood Rio Negro #3). March 26, 1941.
- T-13. H. brasiliensis infected with Mistletoe (Dendrophthora poeppighii) Barreivinha on upper Tapajoz, Brazil. February 16, 1941.
- T-15. Village of San Luiz near the first Cachueira on the Tapajoz River. February 16, 1941.
- T-2. Old tapped tree behind Boim, Para, Brazil. February 14, 1941.
- T-3. The old Indian method of tapping. Boim, Para, February 14, 1941.
- T-4. Native plantation being tapped by the Indian method at Boim, Para, Brazil. February 14, 1941.
- T-6. Planted tree being tapped in old Indian way at Boim. The fruiting branch (Arucho) of a palm (Marirti) is held in place with wooden pegs around the tree. Then the tree is wounded with a machadinho and the latex is caught in a cup made from a Castanha seed pod. February 14, 1941.
- T-7. Large H. brasiliensis on an estrada on high plat behind Boim, Para. Circum. of tree 16', 7" badly swollen from tapping with machadinho. February 15, 1941. (See back of picture)
- T-11. View of Barreivinha, a thriving town of the upper Rio Tapajoz during the rubber boom. February 16, 1941.
- T-12. Our launch and Batalao off from Boim, Para. February 14, 1941.
- A-1. Climber, Tatto, and Butler on collection trip near Palmares, Acre, Brazil. January 14, 1941.
- A-2. Castanha tree in cleared campos, Palmares, Acre, Brazil. January 14, 1941.

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Bull., Photos

- A-3. Guide, Tatty, climber near Palmares, Acre, Brazil. January 14, 1941.
- A-4. Tatty, laborer, climber, and Honorio Alves at Palmares, Acre, Brazil. January 13, 1941.
- A-5. Gameleira (Moraceae) tree being cut near Palmares, Acre. January 15, 1941.
- A-8. Crumpled limbs and branches of large Moraceae tree after being felled. Palmares, Acre, Brazil. January 15, 1941.
- M-1. Rubber for the Madeira - Mamore R. R. near Abuna. December, 1940.
- M-2. Loading rubber on the M-M Railroad near Abuna, Brazil. December, 1940.
- M-3. American-Brazilian survey party on an "estrada" near Porto Velho, Amazonas, Brazil. January, 1941. 1. Manifold, 2. Butler, 3. Mallory, 4. Martins, local serigalista, 5. Castro, 6. Tatty, 7. Xavier. By Mrs. Butler.
- M-5. "Rio Mar" in port at Porto Valho, Brazil. January 27, 1941.
- M-6. The dock at Porto Velho with Madeira-Mamore R. R. in background. January 27, 1941.
- M-21. Loading balls of Soava (Sapotaceae); same family yields Chicle and Balata. On Rio Madeira, Brazil. January 31, 1941.
- M-24. Mistletow (*Dendrophthora poeppigii*) on planted *H. brasiliensis* at Concencao on Rio Madeira, Brazil. January 31, 1941.
- M-25. Loading Brazil nuts on bank of Rio Madeira. January 31, 1941.
- M-28. Hand operated barge serving as a bridge across Rio Candeias near Porto Velho. January, 1941.
- M-7. Cargo of farinha, veg. oil, tobacco and balled rubber being shipped from a barraca on the Rio Madeira. January 31, 1941.
- M-8. Mallory "visiting" on the Rio Candeira near Porto Velho, Brazil.

- M-9. Lauro P. Xavier of the Brazilian commission. Porto Velho, Amazonas, Brazil. December, 1940.
- M-11. Tapping done with the Amazon knife near Porto Velho (white mark is a pencil). January, 1941.
- M-13. Making "Farinha" near Porto Velho, Brazil. January, 1941.
- M-14. Making "Farinha" near Porto Velho, Brazil. January, 1941.
- M-16. Brazil nuts and balled rubber being transported to large river boat on Rio Madeira, Brazil. January 31, 1941.
- M-17. Barraca on the shore of Rio Madiera. January 31, 1941.
- M-18. Smoking rubber deep in the forest off the banks of Rio Madeira. January 30, 1941.
- MG-1. Batalao used to ascend Rio Jaci-Parana. Palmira, Mato Grosso, Brazil. June 5, 1941.
- MG-2. Preparing balled rubber; Rio Jaci-Parana, Brazil. June 4, 1941.
- MG-3. Seringueiro with his old and new rubber shoes. June 4, 1941.
- MG-4. Cachoeiras (rapids) at Uniao of upper Rio Jaci-Parana, Brazil. June 23, 1941.
- MG-5. Rubber arriving by muleback at Palmira from Deposito do Rio Branco, Brazil.
- MG-6. Rubber arriving by muleback at Palmira from Deposito de Rio Branco, Brazil.
- MG-7. Rubber arriving by muleback at Palmira from Deposito de Rio Branco, Brazil.
- MG-8. Large Hevea tree near Uniao (San Jose), Brazil. Circumference 5.4 meters. Yield - 3080 c.c. at one tapping. June 28, 1941.

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- MG-9. Large Hevea tree near Uniao (San Jose), Brazil. Circumference 5.4 meters. Yield - 3080 c.c. at one tapping. June 28, 1941.
- MG-10. Large Hevea tree near Uniao (San Jose), Brazil. Circumference 5.4 meters. Yield - 3080 c.c. at one tapping. June 28, 1941.
- MG-11. Local cargo on Bataloes on Rio Madeira near Porto Velho, Brazil. July 7, 1941.
- MG-12. Wood for river steamers at Maicy on Rio Madeira, Brazil. May 23, 1941.
- MG-13. Bringing in wood for steamers at Maicy on Rio Madeira, Brazil. May 23, 1941.
- MG-14. Two one-liter cans running over with latex on a tree in estrada of Araujo-Manuel near Extremo do Jamorey, Brazil. June 13, 1941.
- MG-15. Hevea growing among large granite boulders in estrada near Extremo do Jamorey, Brazil. June 14, 1941. Benjamin Rondon, left. Karl D. Butler on right.
- MG-16. Virgin Hevea tapped with Amazon knife; note slight fluting of trunk. June 14, 1941.
- MG-19. Batalao loaded with mules arriving at Palmira do Rio Jaci-Parana, Brazil. July 1, 1941.
- MG-20. Buttress of palm and granite boulders near Extremo do Jamorey, Brazil. June 14, 1941. Butler in picture.
- MG-17. View of vegetation in estrada near Extremo do Jamorey; Cacao in foreground and Ceiba sumahuma in background. Butler in foreground. Benj. Rondon and party in background.
- MG-18. Pao Mulato (Rubiaceae) Motto Grosso, Rio Jamorey? (Extremo do Jamorey) Calycophyllum spruceanum or Capirona Huberiana ?? June, 1941.
- MG-21. Camp at Palmira do Rio Jaci-Parana, Brazil. June 5, 1941.
- MG-22. Home and office of Patrao at Palmira do Rio Jamorey, Brazil. June, 1941.

- MG-23. View of village of Deposito do Rio Branco, Matto Grosso, Brazil.
- MG-24. One of the large forest trees, Ceiba Sumahuma, near Extremo do Jamorey, Brazil. June 14, 1941.
- MG-25. Automobile road through forest near Porto Velho, Amazonas, Brazil.
- F-60. Abandoned lumber-drying kiln at Fordlandia. February 18, 1941.
- F-61. Experimental tapping on a terraced hillside at Fordlandia. February 18, 1941.
- F-62. Vats where latex is creamed before shipment; Fordlandia. February 17, 1941.
- F-63. Bringing in latex at Fordlandia. February 17, 1941.
- F-64. Bradshaw with large locomotive used to transport logs etc. in the early days at Fordlandia. February 18, 1941.
- F-65. Enjoying a refreshing grapefruit at Fordlandia. Cabral, Mallory, Maness, Manifold, and Bradshaw. February 15, 1941.
- F-68. Approaching Fordlandia from the Rio Tapajoz. February 15, 1941.
- F-69. View of landscape on miniature golf course at Fordlandia. February 18, 1941.
- F-66. Fordlandia "creaming" plant with cans of latex bound for the states in the foreground. February 17, 1941.
- F-67. Water tank, saw mill, machine shops. Fordlandia, February 17, 1941.
- F-70. Experimental tapping on 6 yr. old trees. Fordlandia. February 19, 1941. On contour, covercrop - Pueraria.
- F-72. Seedling trees coming into production at Fordlandia. 8 years old. Covercrop - Pueraria. February 19, 1941.
- F-73. He is enjoying his dry farinha in the middle of fresh vegetable garden at Fordlandia. February 17, 1941.

- E-74. Dieback caused by Dothidella at Fordlandia. February 17, 1941.
- F-75. An employee's residence at Fordlandia. February 18, 1941.
- F-76. Hevea plantings on steep hillside with cover crop at Fordlandia. February 17, 1941.
- F-77. General view at Fordlandia - Rio Tapajoz in the distance. February 18, 1941.
- E-78. Pueraria javonica cover crop in Hevea planting at Fordlandia. February 17, 1941. This is vigna cover. J. E. B.
- F-79. Vegetable gardens at Fordlandia. February 17, 1941.
- F-80. Vegetable gardens at Fordlandia. February 17, 1941.
- F-81. Vegetable garden at Fordlandia. February 17, 1941.
- F-82. Germination beds at Fordlandia. February 17, 1941.
- F-83. Germination beds at Fordlandia. February 17, 1941.
- F-84. Young nursery rows at Fordlandia. February 17, 1941.
- F-86. One of the apparently resistant seedlings in an early planting at Fordlandia; note that surrounding trees are very small and practically defoliated. February 18, 1941.
- F-85. Abandoned area at Fordlandia. February 17, 1941.
- F-88. View of Fordlandia plantations from river. February 17, 1941.
- F-89. Grapefruit tree at Fordlandia. They now have over 80 acres in production. February 17, 1941.
- F-90. Citrus grove at Fordlandia. February 15, 1941.
- F-91. South American leaf disease on Tapajoz stock and apparently resistant Belem stock in background. February 17, 1941.

- F-92. Crepe rubber milled at Fordlandia. February 15, 1941.

- F-93. Fordlandia; view showing how S. A. D. D. is much worse in low places than in higher places. February 17, 1941.

- F-94. View of Fordlandia plantations from river. February 17, 1941.

- F-95. Note dark row of trees through the center - dark row planted by Weir - selected Belem seedlings planted in 2-foot holes etc. 5 years after surrounding trees, which were planted in 1929. The surrounding trees were planted from selected Tapajoz seed. Method of planting not recorded but believed to be bad method. Fordlandia. February 17, 1941.

- F-96. Close-up of Weir row at Fordlandia. The tree in the background (Weir row) is 5 years younger than the tree in the foreground. February 17, 1941.

- F-1. Germination seed beds in the shape of partly cleared forest at Belterra. February 12, 1941.

- F-2. Spear-head canker (nonpathogenic) Belterra. February 13, 1941.

- F-3. Germination beds in shape of partly cleared forest at Belterra. February 12, 1941.

- F-4. One of the highways at Belterra. February 13, 1941.

- F-5. Row of thatched-roofed houses constructed by Ford at Belterra. (@ \$15. each). February 13, 1941.

- F-6. Preparation of soil for planting in field at Belterra. February 12, 1941.

- F-7. Outhouse and bathroom in the rear of a laborer's house at Belterra. February 12, 1941.

- F-8. Preparation for field planting at Belterra. February 12, 1941.

- F-9. Planting operation in field at Belterra. February 12, 1941.

- F-10. Boys hybridizing Hevea trees at Belterra. February 13, 1941.

- F-12. Planting germinated seeds in the field at Belterra. Two seeds planted in each of five holes at a single planted place. Eventually one tree will remain from the 10 planted seeds. February 12, 1941.

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- F-13. Poor growth in areas with cover crop at Belterra. February 13, 1941.
- F-14. Planting operation in field at Belterra. February 12, 1941.
- F-15. Planting germinated seeds in the field at Belterra. Two seeds planted in each of five holes at a single planted place. Eventually one tree will remain from the 10 planted seeds. February 12, 1941.
- F-16. Cover crop versus no cover crop at Belterra. Most luxuriant growth where no cover crop (at this time of year). February 13, 1941.
- Series of 14 pictures taken of Institut Agronomico do Norte Belem, Para, Brasil and of Brasilian Members of Survey Party #4. By J. D. Mallory, December 14 & 17, 1940.
- F-17. Top work at Belterra. Top - guianensis. Tapping panel - PP 186. Root stock - Belem seedling.
- F-18. No cover versus cover with Tephrosia toxicaria at Belterra, road 5, stump budded with P. B. 123 in 1938. February 13, 1941.
- F-19. General view at Belterra showing clean culture under the trees. February 13, 1941.
- F-20. Outstanding vigor of an Acre clone as compared to others at Belterra. February 13, 1941.
- F-21. Laborers house at Belterra. February 12, 1941.
- F-23. Germination beds at Belterra. February 12, 1941.
- F-25. General view at Belterra showing debris left after clearing. Also large trees on left show vigor of Acre clones. February 15, 1941.
- F-26. Topwork at Belterra: Top - H. guianensis, Tapping panel - PP 186; Root stock - Belem seedling. Cabral left, Manifold right. February 13, 1941.
- Brazil: (Budding Hevea at Belterra, February 13, 1941:)
- F-28. Selection of budwood.
- F-29. Cutting a bud from the budwood.

- F-30. The necessary materials: knife, bud, seedling, wrapping tape.
- F-31. Peeling the bark on a seedling.
- F-32. Placement of bud.
- F-33. Wrapping from the bottom to assure water runoff.
- F-34. Completing the wrapping.
- F-35. Seedling as cut off above the bud shoot.
- F-36. Elephants foot on 3-yr. old budded stock.
- F-38. Test-tapping at Belterra. February 13, 1941.
- F-39. Yellow scale on *H. brasiliensis* at Belterra. February 13, 1941.
- F-40. Yellow scale on *H. brasiliensis* at Belterra. February 13, 1941.
- F-41. Bud-scale damage at Belterra. February 13, 1941.
- F-43. One wing of the hospital at Belterra. February 13, 1941.
- F-44. Holes dug to examine and treat "stump canker" (cause unknown) at Belterra. February 13, 1941.
- F-45. Tap root rot attributed to Fomes at Belterra. February 13, 1941.
- F-47. Test tapping at Belterra; cup inverted when not in use to prevent collection of rain. February 13, 1941.
- F-49. Bachelors club at Belterra. February 13, 1941.
- F-50. Test-tapping 9 yr. old seedlings at Belterra. February 13, 1941.
- F-51. A nursery at Belterra. February 13, 1941.

- F-52. General managers office. Belterra. February 13, 1941.
- F-53. Tap root rot attributed to Fomes at Belterra. February 13, 1941.
- F-54. Laborers house in plantation at Belterra. February 12, 1941.

Brazil: (Spraying for Yellow Scale at Belterra, Brazil. February 13, 1941):

- F-55.

- F-56.

- F-57.

- F-58.

- F-59.

- O-1. Pineapples planted between young rubber planting near Manaos, Amazonas. February 7, 1941.
- O-3. Pineapples planted between young rubber planting near Manaos, February 7, 1941.
- O-4. Planted Castanha 9 years old near Manaos, Amazonas. Now beginning to bear. February 7, 1941.
- O-5. View in Castanha plantation, 9 years old near Manaos, Amazonas. Manifold, Mallory and Cabral in picture. February 7, 1941.
- O-6. Termite nest on dead tree near Manaos, Amazonas. February 7, 1941.
- O-7. 3 yr. old Hevea seedling planting near Manaos, Amazonas. Typical second growth jungle in the plantations of natives.
- O-8. Cutting ball rubber for inspection at Manaos. April 14, 1941.
- O-9. Cutting ball rubber for inspection at Manaos. April 14, 1941.
- O-10. Cutting ball rubber for inspection at Manaos. April 14, 1941.

- 0-11. Long section of cut ball of smoked rubber; note cernamby in center. April 14, 1941.
- 0-12. Slicing ball rubber previous to washing in washing plant at Manaos. April 14, 1941.
- 0-13. Slicing ball rubber previous to washing in washing plant at Manaos. April 14, 1941.
- 0-14. Removal of debris from crepe rubber at washing plant in Manaos. April 14, 1941.
- 0-15 and 0-16. Crude and prepared balata at Manaos. April 14, 1941.
- 0-17. Crepe balata after washing at Manaos. April 14, 1941.
- 0-18. Hevea Spruceana in native habitat near Lake Marapata in vicinity of Manaos. Often the base of native H. Spruceana is under water 3-6 months of each year. When photo taken, water was 15-20 feet deep. May 15, 1941.
- 0-19. Dendrophthora poeppigii on H. Spruceana. Lake Marapata near Manaos.
- 0-20. Branch of H. Spruceana showing dehiscent capsules intact after seeds have fallen. May 15, 1941.
- 0-21, 0-22, and 0-23. Native preparing chicle (latex from Sapotaceae) for market. Manaos. May 15, 1941.

Brazil: (Pictures submitted with Sorenson's letter of September 12, 1941. Monthly pictures from the Instituto agronomico do Norte.):

- Picture No. 1. On page 2 in letter of August 23, I mentioned that a few trees of PB 59 were topworked with Guianensis three years ago. I am afraid that this was a mistake with regard to the time of topbudding. It maybe was in 1936 the topwork was done, which would make it 5 years instead of three. The most important, however, is that the topwork saved a tree, or trees, which otherwise would not have had a chance. It not only saved the trees, but it made the trees catch up with and pass fairly resistant seedlings of the same age.
- Picture No. 2. This is such a seedling. It is taken at exactly the same distance as the topbudded clone. Before the topbudding the seedling was far ahead of the susceptible clone, but after the topwork, the guianensis top soon caught up and passed the fairly resistant seedling tree.

- Picture No. 3. This is the same tree as No. 1 seen from a distance.
- Picture No. 4. This is Ru 426, topworked with guianensis. Most of the other trees are fairly resistant seedlings of same age.
- Tapajoz seedling planted at Fordlandia in 1932; top-worked with H. guianensis in 1936. K. D. Butler, August 16, 1941.
- Tapajoz seedling at Fordlandia; planted in 1932, top-worked with Hevea guianensis in 1936. Pueraria cover-crop in background. Photo K. D. Butler, August 16, 1941.
- Photos 26A, 26B, 26C, and 26D. August 1941. 26A: H. Spruceana, 6/41; 26B: Belem, 2/41; 26C: Filipinas, 2/41; and 26D: Ilhas, 2/41.
- Budded stump at I. A. do Norte, Belem.

Brazil: (Photos submitted by Mr. H. G. Sorensen with his letter of November 12, 1941 from Instituto Agronomico do Norte, Belem, Brazil):

- 26E. November 2, 1941. Belem, 2/41.
- 26F. November 2, 1941. Ilhas, 2/41.
- 26G. November 2, 1941. Filipinas, 2/41.
- 26H. November 2, 1941. H. Spruceana, 6/41.
- 26I. November 2, 1941. G. S. 16.

Brazil: (Pictures sent in by Mr. Sorensen with memorandum to Dr. Brandes, received February 25, 1942.):

- 26J. General view of transplanted Liberian seedlings. There will be 3 hectares, or about 7-8 acres. January 29, 1942.
- 26K. Transplanted Liberian seedlings. Between two ditches there are 6 and 6 rows of seedlings planted about 45 x 45 cm. and 1½ meter wide strip in the middle for resistance test of new clones. January 29, 1942.
- 26L. Transplanted Liberian seedlings. Space in meddle is for resistance tests of new clones. January 29, 1942.

- 27A. Liberian seedlings not yet transplanted. January 29, 1942.
- 27B. January 29, 1942. Filipinas, 2/41.
- 27C. Pigeon peas. January 29, 1942.
- 27D. First shipment of Liberia seedlings. January 29, 1942.
- 27E. Transplanted Liberian seedlings. January 29, 1942.
- 27F. January 29, 1942. H. Spruceana, 6/41.
- 27G. January 29, 1942. Ilhas, 2/41.
- 27H. January 29, 1942.
- 27I. January 29, 1942. Belem, 2/41.
- Submitted with Butler's letter of February 4, 1942. G. S. at Belem, November, 1941. Photo by I. A. N. Photographer.

Brazil: (Pictures sent in Sorensen's letter received February 25, 1942, to Dr. Brandes):

- 27J. Local shipment just arrived.
- 27K. Dr. Camargo, sons, daughter and Dyck.

- Tapajoz seedling at Fordlandis, planted 1932, topworked with *H. guianensis* in 1936. Crooked but strong union. Photo by K. D. Butler, August 16, 1941.

Brazil: (Belem photographs received with letter of July 10, 1942 from W. E. Manis):

- 27L. May, 1942. Planting of budded stumps of the Phillipinae selections, in groups of five among the Liberian seedlings.
- 27M. May, 1942. Hevea spruceana.

- 28A. May, 1942. Hevea brasiliensis. Philippine seedlings. Most of these have been budded and will soon be cut back.
- 28B. May, 1942. Hevea brasiliensis seed from Islands near Belem.
- 28C. May, 1942. One of the most promising appearing seedlings among the first planted Liberian material. Leaf at lower right rear is infected "target spot" and not Dothidella.
- 28D. May, 1942. G. S. 16. Lote B, Row 1, Plant No. 3.

Belterra, Brazil:

- Brandes. Top budded rubber trees. Belterra, Plantation, Brazil. December, 1942. (Includes 2 other angles of photo).
- Belterra, Brazil, 1947.
- Belterra, Brazil, 1945.
- Belterra, Brazil, 1942.

Ecuador:

- E-60. Rubber from the Oriente, or eastern slope of the Andes, is brought into Quito for weighing and checking before shipment to the United States. October 1, 1943. Corporacion Ecuatoriana de Fomento. Pichilingue, Ecuador. Photo Mitchell.
- E-62. Rubber latex is strained of impurities before coagulating. September 23, 1943. Corporacion Ecuatoriana de Fomento. Pichilingue, Ecuador. Photo Mitchell.
- E-64. Rubber latex is treated with a mixture of alum, phenol, and acetic acid to make it coagulate. September 23, 1943. Corporacion Ecuatoriana de Fomento. Pichilingue, Ecuador. Photo Mitchell.
- E-63. Rubber latex is strained of impurities before coagulating. September 23, 1943. Corporacion Ecuatoriana de Fomento. Pichilingue, Ecuador. Photo Mitchell.
- E-67. Rubber latex is coated on cloth for the production of waterproof material. October 1, 1943. Quito, Ecuador. Photo Mitchell.
- E-65. Rubber is rolled into sheets for shipment after coagulation. September 23, 1943. Corporacion Ecuatoriana de Fomento. Pichilingue, Ecuador. Photo Springfield.
- E-66. Rubber is rolled into sheets for shipment after coagulation. September 23, 1943. Corporacion Ecuatoriana de Fomento. Pichilingue, Ecuador. Photo Springfield.

Speedway Estate, Cairo - Photographs:

- View of Manager's home on the Goodyear Plantation at Cairo, Costa Rica.
1/9/41.
- T-4. View of seedling Hevea trees on Goodyear Co. Speedway Estate, Cairo, Costa Rica. These trees were set out by the United Fruit Co. about 13-14 years ago. Some selections have been made from these trees for resistance. January 9, 1941. (Photo missing)
- A. View of the R. R. Station at Turrialba, C. R. 10/26/40.
- B. View along Railway looking toward San Jose and showing U. F. Co. Guesthouse.

- 2A. Concrete covered spring supplying Town of Turrialba, Costa Rica with water carried thru a $4\frac{1}{2}$ inch cast iron pipe about 6 kil. above town on mountain-side. November 29, 1940.
- 2B. Galvanized shed with locked door cover-open concrete tank for reducing pressure on pipeline carrying water from spring to Turrialba. November 29, 1940.
- 3. View inside the shed covering the concrete tank. The incoming pipe enters at one end and the out-going at the other, thus reducing the pipe-pressure and allowing the water to circulate freely. November 29, 1940.
- 4. View of Pazos Tract of $6\frac{1}{2}$ acres, proposed site for the dwellings of U. S. D. A. staff. Turrialba, 10/26/40.
- 5A. Turrialba Volcano as seen from dwelling location on Pazos tract in late evening. 12/6/40.
- 5B. Another view of Turrialba Volcano as seen from Pazos tract. Volcano cone may been seen beyond first mountain and to left. Elev. about 11,500 feet. 12/7/40.
- 6A. View of the Fernandez Farm near Turrialba, C. R. From the Pejivalle branch line. 11/9/40.
- 6B. Women picking coffee on Fernandez Farm before clearing. 10/17/40.
- 6C. Starting to clear for first shipment of Hevea seeds from Honduras. 10/17/40.
- 7A. Showing height of first seeds planted 10/9/40 from Honduras, photo taken 11/9/40, 22 days. Fernandez Farm, Turrialba. Rule is 6 in.
- 7B. View of same bed as picture on left showing Hevea seeds from Tela, Honduras 22 days from date of planting. Fernandez Farm, Turrialba, 11/9/40.
- 7C. View of clearing of area 1200 x 70 ft. on Fernandez Farm in preparation for 100,000 Hevea seeds from Philippines. 11/9/40.
- 7D. Another view of clearing of same area as picture on left. 11/9/40.

- 8A. View showing completed beds in distance and start of new in foreground, area 450 x 50 ft. Fernandez Farm, 10/26/40.
- 8B. Men planting Hevea seeds. Note measuring stick and pegs for making holes for the seed. Fernandez Farm, 10/31/40.
- 8C. View showing entire area 450 x 50 ft. in beds and beds in background planted with Hevea seed from Honduras. Fernandez Farm, 10/30/40.
- 9A. View looking NW along back of the Fernandez and Jimenez tracts showing drop down to the Rio Turrialba which forms the back boundary of these areas. Photo from Fernandez tract. November 29, 1940.
- 9B. Another view a little nearer to the Jimenez tract. The town of Turrialba about one mile away is visible just over tree tops in the middle distance. November 29, 1940.
- 10A. View of progress in clearing 1200 x 70 ft. area on Fernandez Farm for shipment of Hevea seeds from Philippines, showing men leveling and spading area. November 29, 1940.
- 10B. Showing type of drainage ditches constructed on 1200 x 70 ft. area shown above. These consist of a rock tunnel covered with small stones as shown. November 29, 1940.
- 11A. Showing height of Hevea seeds from Honduras planted 10/19/40, (first lot received) 42 days old. Photo taken November 29, 1940. Height approx. one ft. (Compare with earlier photo shown).
- 11B. View of second plot planted with seed from Honduras (received October 19) planted from germinating beds about October 24 - November 23. Photo taken November 29, seedlings about 37 days old; height about 10-11 in.
- 12A. View on Fernandez tract showing use of the small stones cleared from area in planting for making roads. 11/29/40.
- 12B. View in same area as above: men in distance are preparing pit for compost all of the small branches and leaves of the coffee cleared from the planting areas will be placed here and layered with soil. 11/29/40.
- 13A. Case of Hevea seeds from the Philippines. Laborer picking out germinated seed for immediate planting. 12/11/40.
- 13B. Same as above but showing seeds emptied from case after sprouted seeds are removed. Men are sorting over remaining seed.

- 14A. Showing extent of germination of some of the seeds; this was observed only near the outer surfaces where oxygen was probably more easily available. Approximately 1500 of the 100,000 received were in this condition. These were planted immediately and many are in good shape. 12/11/40.
- 14B. Close up of seed as removed from the shipping boxes packed in sawdust. This lot did not show appreciable amount of germination in shipment. The sawdust of all cases was quite dry. 12/11/40.
- 15A. Another view of men sorting seeds from the Philippines; Mr. Lizano kneeling on right. All cases of seed were carefully fumigated with cyano gas before seed was removed. 12/11/40.
- 15B. View of germinating beds, Philippine seed. Men are sorting over seed for removal of germinated seed for immediate planting. This is done each morning, approximately 2000 being set out each day which gradually decreases to several hundred in two weeks or more until all viable seed are planted. This germination interval varies considerably some seed requiring as long as 3 to 4 weeks. 12/13/40
- 16A. Close-up of men sorting Hevea seed from Philippines in germination beds. Fernandez tract. 12/13/40.
- 16B. View showing seeds which had sprouted in shipment after placing in planting beds. The colorless shoots are beginning to develop chlorophyll and grow erect. It is estimated that about 30-50% of such plants will survive. 12/13/40.
- 17A. View looking toward front of Fernandez tract (foremans house in distance) showing area for Philippine seed, 1200 x 70 ft. Beds are 65 feet long by 5 ft. side. Just back of the position from which this photo was taken are the beds containing the seedlings from Honduras in which the leaf-spot is now present (see following photos). 12/13/40.
- 17B. View of area in bed of seedlings of material from Honduras planted 10/9/40 showing plants affected by leaf-spot. Disease was first observed 12/7/40 and since has been observed in scattered plants over the entire area planted with the Honduras seedlings. In the majority of cases the disease is in the first stage, a few being in the second stage, however, it is expected that when the next (2nd) flush of leaves appears the entire area will be affected. 12/14/40. Note: several seedlings have lost leaves entirely.)
- 18A. Close-up of Honduras seedling showing Dothidella ullei in early stage of development. Leaves are severely deformed but as yet no shot-hole effect has appeared. 12/14/40.

- 18B. Same plant as above but showing underside of leaves. Note black stromatic rings. A few have broken thru the upper surface of the young leaves. Seedling just beyond and slightly out of focus is in very early stage, note raised areas of infection. 12/14/40.
- 19A. General view of area 1200 x 70 ft. planted with Philippine material. About 40,000 seedlings growing and several hundred a day coming from germinating beds. 1/3/41.
- 19B. Close-up of recovered seedlings shown in a preceding photo of seed from Philippines which had sprouted in cases during shipment. 1/3/41.
- 20A. View of start of new clearing adjacent to area in Philippine seedlings (to right) in preparation for seed from Brazil. Fernandez tract, Turrialba. 1/3/41.
- 20B. Another view of new clearing as shown above. 1/3/41.
- 21A. View of beds of seedlings (Honduras seed). 1/3/41.
- 21B. Close-up of young seedling (Honduras) affected with *D. ulei*. Typical appearance of many of these seedlings at time of photo. Fernandez tract Turrialba, Costa Rica. 1/3/41.
- Fernandez area, Turrialba, Costa Rica. Close-up of one of the Honduras seedlings infected with *Dothidella ulei*. Photo taken January 3, 1941. By Allard.
- T-51. Hand baling press used in forming bales of the smoked sheet for shipping. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-50. A comparison of the appearance of smoked and unsmoked sheet. Mr. Klippert of the Goodyear Co. holding the sheets. Speedway Estate, Cairo, Costa Rica. January 9, 1941.
- T-49. Another view of partly smoked sheet hanging in the smokehouse. Speedway Estate, Cairo, Costa Rica. January 9, 1941.
- T-47. Freshly milled sheet after washing and preparatory to placing in smokehouse. Speedway Estate, Goodyear Do., Cairo, Costa Rica. January 9, 1941.
- T-45. Close-up of milling machine in operation. Speedway Estate, Goodyear Co., Costa Rica. January 9, 1941.

- T-43. Showing type of coagulating pans used which are made of kerosene tins cut in half. Formic acid is added here to bring about coagulation. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-41. View showing method of "strip-clearing" of field for planting. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941. Note holes for planting.
- T-40. Close-up showing Heliconia species used as cover crop to reduce slashing charges or weeding. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-39. Another view of "strip-clearing" preparatory to planting. Goodyear Co., Speedway Estate, Cairo, Costa Rica. January 9, 1941.
- T-37. A view of some seedlings from hand-pollinated crosses made by U. S. D. A. showing varying degrees of slight resistance. Speedway Estate, Cairo, Costa Rica. January 9, 1941.
- T-36. Another view of leaves of non-resistant seedling showing sho-hole effect characteristic of the late stage of infection. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-35. Close-up appearance of leaves of a non-resistant seedling showing heavy infection and malformation, i.e. curling, etc. Compare with preceding resistant leaves. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-34. Typical appearance of top of a non-resistant seedling in the nursery, about 15 months old. This tree and the preceding resistant one are in the same nursery, Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-33. Appearance of leaves of a resistant tree, showing the very slight infection characteristic of highly resistant material. Note the healthy vigor and dark green crisp appearance of the leaves. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-32. Typical appearance of top of a resistant seedling in the nursery, about 15 months old. Compare with following photos. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-31. GS-17, a budded stump having no resistance and badly defoliated by leaf disease. This is the typical appearance of a non-resistant tree. Compare with preceding photos of resistant trees. Speedway Estate, Cairo, Costa Rica. January 9, 1941.

- T-30. A Belem budding showing high resistance about 6 ft. high and 6-8 months old. Note the sturdy, erect growth of the tree which is characteristic of these buddings. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-29. GS-123 showing budded stump of clone selected for high resistance, about 4 months old. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-28. Typical budded stump 2-3 months old showing high resistance. GS-123. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-27. Typical appearance of budded trees about 2-3 years old. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-26. Typical young budded "stump" showing development of bud-shoot after removal of seedling stock about 1" above graft. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-19. Next step in bud-grafting, cutting strip of bark on seedling for inserting bud-patch. Cut made about 1" above ground surface. Speedway Estate, Cairo, Costa Rica, Goodyear Co. January 9, 1941.
- T-23. Showing graft completely wrapped with paraffin cloth. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-22. Another view showing wrapping of graft. 14-21 days are allowed before this is unwrapped to determine whether it is a take, depending on weather. Another 10-14 days are allowed before the seedling stock is cut off about 1" above bud-patch. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-24. Applying melted paraffin to cloth in final step in grafting from weather etc. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-14. Men selecting suitable beds for budding from stick of budwood. Budwood is about the same size as seedling to be budded, i.e. 3/4 to 1 inch diameter. Goodyear Plantation, Cairo, Costa Rica.
- T-25. Close-up of application of melted paraffin to cloth wrapping over graft. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.
- T-15. Showing sticks of budwood from which buds have been removed for budding on seedlings. Goodyear Plantation, Cairo, Costa Rica. January 9, 1941.

- T-13. Another view of nursery along R. R. tracks on Goodyear Co.'s Speedway Estate at Cairo, Costa Rica, showing use of castor bean. January 9, 1941.
- T-12. View along R. R. tracks on Goodyear Co.'s Speedway Estate at Cairo, Costa Rica, showing the use of castor bean as a preventative measure from damage by small rodent "Taltusa", which destroys roots of Hevea in this region. The animal shuns the roots of the castor bean. January 9, 1941.
- T-11. Another view on Goodyear Co.'s Speedway Estate at Cairo, Costa Rica, showing various stages in wintering of Hevea. January 9, 1941.
- T-10. View on Speedway Estate of Goodyear Co. at Cairo, Costa Rica, showing wintering of Hevea. January 9, 1941.
- T-9. View showing GS-16, a promising selection made at Speedway Estate, Cairo, Costa Rica. Mother tree is now dead. These trees (buddings) are about 3 years old. January 9, 1941.
- T-7. Typical example of bad tapping and subsequent poor bark renewal. Note prevalence of wounds etc. Speedway Estate, Cairo, Costa Rica. January 9, 1941.
- T-6. Method of collecting cup biscuits in test-tapping young trees at Goodyear's Speedway Estate, Cairo, Costa Rica. Tree is GS 123, a good yielder. January 9, 1941.
- T-3. Construction of laborers' camps, Goodyear Co., Speedway Estate, Cairo, Costa Rica. January 9, 1941.
- T-2. View of school erected by Goodyear Rubber Co. on their plantation, Speedway Estate, Cairo, Costa Rica for children of laborers. January 9, 1941.
- T-38. One of Goodyear's promising selections, GS-16, about 2 years old. Note height due to uninterrupted growth. Also note inter-planting with bananas. Speedway Estate, Goodyear Co., Cairo, Costa Rica. January 9, 1941.

Guatemala Pictures: (Bananera):

- U-23-2. Simeon, foreman, beside a tree 18 months old (L. A. Beery, Jr., 4/25/46). Picture missing.
- U-23-3. Area of GA-1279. L. A. Beery, Jr., 4/25/46.
- U-23-4. Area of GA-1279. L. A. Beery, Jr., 4/25/46.
- U-23-5. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-23-6. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-23-36. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-23-37. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-23-38. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-23-39. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-23-44. Another view of general field planting. L. A. Beery, Jr., 4/25/46.
- U-26-0. Young two-flush top-budding on plant of GA-1279. Note how buddings are tied with old tape to protect them from breaking. Swelling at junction of top-budding shows it is becoming well-anchored on tree. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-1. A close-up of top-budding, showing how termites have attacked the snag above the top-budding. Snag will be removed and the cut and painted over. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-2. Another close-up of same plant shown in U-26-1. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-3. Looking down a row of top-budded trees; mostly with two flushes of foliage. Area not very clean because of October strike which prevented normal maintenance operations. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-4. Negative blurred. L. A. Beery, Jr., 12/13/46. (No picture or negative here).

- U-26-5. A close-up of a fine young 3-flush top-budding at four months. The snag has been eaten away by termites. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-6. A close-up of young top-budding to show termite damage. Termites work down from the top of the snag as it gradually dies back to the point of topworking. Snags should be removed to prevent the termites from working down through the center of the tree below the point of topworking. Snag should be cut off at an angle immediately above the ring of tissue the top-budding is forming around the tree. The exposed surface is painted. Surface heals over in a few months on trees of this size. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-7. View of a healthy 2-flush top-budding. No evidence of termite attack. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-10. This close-up shows a successfully topworked tree which has been ringed and then had the top cut off when the top-bud began to grow. Note the many shoots below the top-budding which must be removed on the next round of inspection when the top-budding is tied. The small shoots above the ring need not be removed since they eventually die. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-11. This photograph shows one of many areas in which leaf-cutting ants have caused extensive defoliation of the trees. The strike enabled the ants to get out of control, at least temporarily. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-8. Looking down a row of young top-buddings in block of GA-1279. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-9. A close-up of a very young top-bud shoot that is not yet large enough to tie. Stick to which top-budding will be tied has already been placed. On next inspection round the budding will be tied and the other shoots removed. Note small shoot arising from point just above panel cut first topworking round. Panel itself is almost healed over. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-13. Bad negative. (Negative and picture are not here)
- U-26-12. A tree which has been completely defoliated by leaf-cutting ants. Note how all but the mid-ribs of the leaves have been eaten away. The tree has been ringed, denoting a successful top-budding. L. A. Beery, Jr., 12/13/46. (Picture missing)
- U-26-15 similar to U-26-14. L. A. Beery, Jr., 12/13/46. (Picture missing)

- U-26-16. View of another young top-budding. This area has just recently been slashed and ring-weeded. Mr. Pike standing beside tree. L. A. Beery, Jr., 12/13/46. (Picture missing)

Guatemala: (Stanwood's Pictures):

- Nursery at San Fernando. Elevation 2,000 ft. Seedlings just emerged. October 12, 1941.
- Nurseries at San Fernando. 2,000 ft. October 12, 1941.
- Water for irrigation. San Fernando, October 12, 1941. Sr. Trunio.
- Nurseries. San Fernando. 2000 ft. October 12, 1941.
- San Fernando. 2,000 ft. October 12, 1941.
- Nurseries. San Fernando. 2,000 ft. October 12, 1941.
- 1,800 seedlings unbudded at Finca Chitalon. To be budded early summer of 1942. Sr. Trunio. October 12, 1941.
- Hevea seedlings just germinating at Finca Helvetia. Elev. 3100'. Mr. Davies and Administrators. October 12, 1941.
- Hevea nursery at Finca Chitalon. Coffee shade removed. October 12, 1941.
- Trapiche Grande. Hevea seed and Castillca rubber enroute to R. R. September 14, 1941.
- The old and new ox cart of Baled Castilloa and Hevea seed. Trapiche Grande. Sept. 14, 1941.
- Water for irrigating 40,000 plant nursery of El Horizonte, 850'. October 17, 1941.
- Nursery site at El Tombor, elevation 2400'. October 15, 1941.

Guatemala: Misc.

- Tablones para 40,000 semillas de Hebea brasiliensis. Sr. Toruno. Para las Haciendas "El Horizonte y" Los Patos. Ia. semana de November de 1941. Foto. V. M. Aguilar.
- CC-100. Clearing land for planting budded stumps at USDA Rubber Plant Budwood Garden, San Francisco, Trapiche Grande, Cuyotenango. September, 1943.
- CC-101. Laborers' houses being constructed at Budwood Garden. Jose Coronado and Vitelio Acuna. December, 1943.
- CC-102. Laborers' house at Budwood Gardens. December, 1943.
- CC-103. Dam in Canal for supplying irrigation. Jose Coronado. December, 1943.
- CC-104. Seedling nursery at Budwood Garden with irrigation. December, 1943.
- CC-105. Irrigation ditch at Budwood Garden showing clone GX-26. December, 1943.
- CC-106. Placing 1943 seeds in germination bed at Budwood Garden. Jose Coronado.
- CC-107. View of Section A-Plot 6, Clone GA-49 at Budwood Garden. December, 1943.
- CC-108. Germination beds at Hacienda Trapiche Grande for 1943 seeds. December, 1943.
- CC-109. View showing germination beds at Hacienda Trapiche Grande. O'Donnell, December, 1943.
- CC-110. 1942 seedling nursery transplanted to 18" x 18" nursery spacing at Hacienda Trapiche Grande. December, 1943.
- CC-111. Top budding with TU-41 resistant clones at Hacienda Trapiche Grande. Arvid Royne. December, 1943.

- CC-112. Same as CC-111.
- CC-113. Seedling nursery from 1943 seeds at finca "La Patria". December, 1943.
- CC-114. Seedling nursery and germination bed for 1943 seeds at finca "Santa Adela". December, 1943.
- CC-115. Seeds which did not germinate in germination bed at finca "Santa Adela". December, 1943.
- CC-116. View of USDA Budwood Garden, Hacienda Trapiche Grande, December, 1943.
- CC-117. Liberian clonal seedlings in field planting at finca "La Palmera". Dr. T. D. Mallory. January, 1944.
- CC-118. Dr. T. D. Mallory and Sr. Jose Coronado at USDA Budwood Garden, Trapiche Grande. January, 1944.
- CC-119. Gasoline motor and water pump used for lifting water from river to nursery beds, San Andres. El Salvador. January, 1944.
- CC-120. View showing wooden flume used to carry water from pump to nursery beds, San Andres. El Salvador. January, 1944.
- CC-121. Method of irrigation after water has been lifted to nursery beds. San Andres. El Salvador. January, 1944.
- CC-122. Seeding nursery from 1942 seeds at Zapotitlan, El Salvador. Sr. Ricardo Dominguez in foreground. January, 1944.
- CC-123. Multiplication garden at Zapotitlan, El Salvador, Sr. Ricardo Dominguez in foreground. January, 1944.
- Hevea seedlings planted in 1942, and recently transplanted from crowded nursery at Trapiche Grande Finca. There are about a million such seedlings.
- Same as above.

- Nursery at La Palmera Finca, showing planting on terraces. Seedlings planted in 1942. (42A)
- Nursery at La Palmera Finca, showing planting on terraces. Seedlings planted in 1942. (42B)
- Geyer demonstrating method of digging holes for transplanting budded stumps. Trapiche Grande Finca. Stanwood and L. L. Petterson looking on. (42C)
- Field planting of budded material with lemon grass cover at Trapiche Grande Finca. (42D)
- Field planting of Hevea seedlings at El Horizonte. Seedlings had been transplanted a few weeks before in corn field interplanted with rice; corn crop will be harvested within a month. (42E)
- On Finca El Horozonte, road next to the field planting. (42F)
- Nursery at San Luis finca, planted in 1941. (42G)
- Geyer, Stanwood, and O'Donnal at El Horizonte Finca Nursery planted in 1941 in background. (42H)
- Nursery at La Palmera Finca, showing planting on terraces. Seedlings planted in 1942. (42I)
- Geyer, Stanwood, and O'Donnal in nursery at La Palmera. (42J)
- Cattle on El Horozonte. (42K)
- Field planting at Chitalon Finca. (42L)
- The jeep stuck in mud on road which is being constructed on one of the fincas. (42M)
- The jeep stuck in mud on road which is being constructed on one of the fincas. (42N)
- O'Donnal in nursery at La Palmera. (42O)
- Nursery at La Palmera. (42P)

- Geyer, Stanwood and O'Donnal demonstrating the proper way of wrapping in the budding operation. Note the loose wrapping tape on the seedling to the right. (43A)
- Geyer, Stanwood and O'Donnal demonstrating the proper way of wrapping in budding operation. (43B)
- Geyer and Letsinger at the Bananera nursery. (43C)
- View of the nursery at Bananera. (43D)
- Field planting of budded material with lemon grass cover at Trapiche Grande Finca. (43E)
- Budded stumps in field planting with lemon grass cover at Trapiche Grande. (43F)
- Budded stumps in field planting with lemon grass cover at Trapiche Grande. Geyer and Stanwood. (43G)
- Budded stumps in field planting with lemon grass cover at Trapiche Grande. Geyer and Stanwood. (43H)
- Nursery at La Palmera Finca, showing planting on terraces. Seedlings planted in 1942. (43I)
- Nursery at La Palmera Finca, showing planting on terraces; seedlings planted in 1942. (43J)
- Nursery at El Horizonte Finca, planted in 1941. (43K)
- Nursery at El Horizonte Finca, planted in 1941. (43L)
- Old seedlings at Trapiche Grande. (43M)
- Old seedlings at Trapiche Grande. Geyer, O'Donnal and Petterson. (43N)
- Old seedlings at Trapiche Grande. (43O)
- Seedling nursery at Bananera owned by United Fruit Co. Planted, 1942. (43P)
- Method of transportation to nursery at Bananera. (43Q)

- Nursery at Bananera, Letsinger, Geyer, and O'Donnal. (44A)
 - Mosaic-like condition of seedling at Bananera. (44B)
 - Geyer, Stanwood, and O'Donnal demonstrating proper way of wrapping in the budding operation. (44C)
 - Nursery at El Horizonte Finca, planted in 1941. (44D)
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- G-364. Rubber (*Hevea brasiliensis*) 3 months old in nursery. December 18, 1945. Finca Palo Gordo, Guatemala. Photo Mitchell.

U. S. D. A. Cooperative Rubber Plant Field Station, Marfranc, Haiti, Self explanatory photographs by R. J. Seibert, March, 1941 - July, 1942.

- Panoramic view of the topography and vegetation in the Marfranc area. The U. S. D. A. cooperative rubber plant field station, Marfranc, Haiti, is located in the Grande Anse Valley to the left. The area has been under constant cultivation by small farmers. Trees are mostly food trees as coconut, mango and breadfruit. D34-15, 15 & 16. March 9, 1941.
- The start of clearing operations for the Marfranc nursery. Area consisted of small holdings on which was growing bananas, mangoes, breadfruit, coffee, and cacao. D36-11. March 31, 1941. (45A)
- Clearing operations for the nursery also included the removal of numerous homes as figured. D36-12. March 31, 1941. (45B)
- The nursery area at Marfranc being cleared. The royal palm is abundantly grown. Fruit is used as hog food, leaves for thatch, heart for food and trunk for planks. D36-13. March 31, 1941. (45C)
- Preparing a water intake and pump pit for nursery irrigation from the Grande Anse River. D36-17. April 3, 1941. (45D)
- Mr. Aurel Denizard, District Agronomist for the District of Jeremie, supervising the felling of a large mango tree. D36-22. April 3, 1941. (45E)
- Lack of tractors is no object when labor is plentiful. Rolling a large mango log off the nursery site. D36-16. April 3, 1941. (45F)
- Type of native house consists of a masonry foundation, walls of interwoven bamboo covered with lime plaster. Roofs are thatched with royal palm or vetivert. Across from the Marfranc nursery is located the Marfrance "Ferme Ecole" or Government farm school for the country children. D36-23. April 3, 1941. (45G)
- Sand, gravel and rock is purchased from individuals who either pack or head-load the material to the spot and maintain their own pile. Payment is made on the basis of the cubic meter or more frequently the "Toise" of 6 cubic meters. D36-18. April 3, 1941. (45H)
- Attempting to steal the payroll in Haiti is very serious. The culprit is being tried by legal court. Court is held at the exact spot of the crime at which place the judge presides. D36-28. April 16, 1941. (45I)

- Pay day is accompanied by large crowds of market women waiting to collect their debts and by a great deal of gambling. D36-31. April 16, 1941. (46A)
- The nursery area of the U. S. D. A. Cooperative Rubber Plant Field Station, located at Marfranc, Haiti. Within this area there were seven houses, representing family homes, each having around it a small area under cultivation. Land is the property of the Haitian Government and was occupied by renters. D36-19,20,21. April 16, 1941.
- The first shipment of Philippine stumps to Haiti being trans-shipped to a small Haitian coastal boat for their last leg of the journey to Marfranc. D36-25. April 8, 1941. (46B)
- View of the Breeding Garden area at Marfranc, located on river bench land. The area consisted of small farms growing bananas, sugar cane, rice, beans, corn, mangoes, breadfruit, coconuts and Royal Palm. Lack of sufficient time for complete felling and clearing necessitated later clearing between the rubber rows. D36 & D37. April 30, 1941. (46C)
- The establishment of various test plots scattered throughout the Republic of Haiti was done to observe by actual growing plants the nature of the soil and climatic conditions of various likely areas for future development. Mr. Aurel Denizard, Haitian Assistant at the U. S. D. A. Cooperative Rubber Plant Field Station, Marfranc is transplanting some seedlings to a plot near Anse D'Hainault. D41-25. December 9, 1941.
- Flying the American and Haitian colors in honor of Pres. Lescot, who visited the Station. January 23, 1942. D42-0.
- From the Jeremie dock, Bayeux stumps were transported by truck, 11 miles to the Marfranc Station. Mr. F. E. Bradshaw, Manager of the Grande Anse Division of SHADA is checking in the shipment from Bayeux. D40-18. September 25, 1941.
- Lightering bundles of Bayeux high stumps from a coastwise boat anchored 200 yards from the dock at Jeremie, Haiti. The stumps were packed with banana trash in bundles of 20 stumps and wrapped in banana mats. D40-17. September 25, 1941.
- Bayeux stumps brought to Marfranc were carried to a shade house where they were inspected and distributed to the nursery for planting in the trenches shown on the right. D40-20. September 25, 1941.
- The Bayeux high stumps were planted in trenches at Marfranc by means of a planting frame made of bamboo. A red paint mark on the stump indicated the proper planting depth for the stump at which point each stump was tied to the frame by means of a cloth strip keeping it in proper position for uniform spacing and planting. D40-23. September 26, 1941.

- After placing stumps in position, soil is placed in the trenches and tamped, when sufficient soil is in to hold the stumps in place, the frame is removed. D40-24. September 27, 1941.
- After the removal of the planting frame, the trench is immediately filled. Planted stumps may be seen to the right. D40-26. September 26, 1941.
- Finished planting of the Bayeux high stumps undergoing final inspection and counting. D40-25. September 26, 1941.
- After a month and a half the Bayeux high stumps are coming out. Very dry conditions at the time of planting slowed development of shoots. November 14, 1941. D41-14.
- Bayeux seedlings 1 1/2 months old, planted latter part of September, 1941. D41-15. November 14, 1941.
- The use of a cane trash or Bagasse mulch proved very helpful in conserving moisture in the ground and for helping to keep nut grass under control. Applying mulch to "El Palmar" seedlings nearly a month old. D42-1. January 23, 1942.
- Portion of Breeding Garden No. I at Marfranc. These trees are 14 months old. Plan to mulch to a distance of one meter from each side. Hill in the immediate background is the site of Fort Marfranc, built in 1803. On this site was buried one of the signers of the Haitian Declaration of Independence, Laurent Fereau and it is on this site that the building for the U. S. D. A. Cooperative Rubber Plant Field Station are being built. D48-10. July 23, 1942.
- Panoramic view of Breeding Garden No. II at Marfranc. Trees were planted at the end of April, 1941, note their very poor condition. This area is being devoted to the testing of various cover crops. In the foreground may be seen an intercrop and cover test of peanuts, which are doing excellently. All trees are mulched. D48-6, 7, 8. July 23, 1942.
- Cover test of Jack-bean in Breeding Garden II, this plant is the only one so far tried which completely controls nut grass. D48-1. July 23, 1942.
- Cover and intercrop test of lemon grass in Breeding Garden No. II. D48-4. July 23, 1942.
- Looking down on a portion of the nursery area, note seed production plots of Crotalaria juncea and C. Spectabilis. D48-35. July 23, 1942.

- Cover test plots for seed production of Crotalaria spectabilis and C. juncea. The hill side in back has been contoured, clearing 8 foot strips along the contour and planting into a mixed cover of Centrosema plumieri and Dolichos lab-lab. D48-13. July 23, 1942.
- A contoured hillside at Marfranc, showing the quality of the mixed Centrosema plumieri and Dolichos lab-lab cover planted along the cleared strip. After previously preparing hill land this way the area may at any time be cleared or planted without difficult erosion problems. D48-28. July 23, 1942. This area has been contoured and in cover six months.
- Planting Bayeux high stumps on the Marfranc plateau. D40-21. September 26, 1941.
- The Marfranc plateau area just after planting of Bayeux high stumps. This area is of a good type lateritic residual soil as contrasted to the very sandy alluvial soil of the river bench land devoted to breeding gardens and nursery. D40-22. September 26, 1941.
- The Marfranc plateau area 10 months after planting the Bayeux high stumps. In spite of very dry conditions during planting and for 5 months after, the trees made fairly good growth and in no cases showed chlorosis. D48-31. July 23, 1942.
- Looking across a portion of the Marfranc Plateau area to the partially constructed tool house, shop and garage combination. D48-33. July 23, 1942.
- The main entrance to the remains of Fort Marfranc, located on the Station. The fort was built entirely by Haitians in 1803 and was in use up to about 1845. Building site for the Station residence and laboratory is on the parade ground in back of this wall. D41-2. October 22, 1941.
- The parade grounds of Fort Marfranc, site of the Marfranc Station house and laboratory. Note old English cannon to the left center. D41-5. October 22, 1941.
- Start of the construction program for the Marfranc station, work being done by the J. G. White Engineering Corporation, Agents to the Haitian Government. The road leads from the main road, between Jeremie and Anse D'Hainault, and the Fort. D41-11. November 14, 1941.
- Nearly all development in Haiti, whether it be construction or opening of land usually starts by clearing away old foundations of houses or "Cayes". This foundation was on the road site. D41-8. November 14, 1941.
- Looking down on the Marfranc nursery, showing the Grande Anse river to the right and the Jeremie road to the left. D48-34. July 23, 1942.

- View of the Marfranc nursery; Budwood garden of the second shipment of Philippine clones in center foreground. Old budwood garden of the first shipment of Philippine stumps in the background. The Belem seedlings to the left. D48-36. July 23, 1942.
- View of the budwood garden, Marfranc, planted in April, 1941. The trees are a little over 5 months old. G. V. - 17 in the foreground. D40-28. September 27, 1941.
- Portion of the Budwood Garden at Marfranc. Trees are now 15 months old. Note the height of trees of G. V. - 17 in background as compared to the height of Mr. H. G. Sorensen. D48-16. July 23, 1942.
- Trees of G. V. - 17, 15 months old, 2 inches in diameter and nearly 18 feet tall. These are the largest of the trees at the Station. Showing Mr. Everett Shaw. D48-22. July 23, 1942.
- 5 months old trees of GA-634, proving one of the best clones at the Station, showing good growth and no chlorosis. D40-30. September 27, 1941.
- GX-15, 5 months old, over 5 feet tall, showing very good growth and color. D40-27. September 27, 1941.
- Through the budwood garden, showing trees of GA-1169, 18 feet tall. D48-24. July 23, 1942.
- The Belem Seedlings 15 months old, showing the great amount of variation in growth. D48-20. July 23, 1942.
- Seedlings of BEl Palmar, 7 months old, having been transplanted from an unsuitable nursery area to this site, where they have lost their chlorotic condition and are now putting out good leaves. D48-26. July 23, 1942.
- GA-634 of the second shipment of Philippine stumps to Haiti, 7 months old. D48-19. July 23, 1942.
- Composite view of the new budwood garden made up of the second shipment of Philippine stumps, planted December 17, 1941. D48-17, 18. July 23, 1942.
- Main entrance, USDA Coop. Rubber Plant Field Station, Marfranc, Haiti. A. W. Bechtel, September 2, 1946. (Two photos)
- Office and Laboratory, contains also dark room and radio section. USDA Coop. Rubber Plant Field Station, Marfranc, Haiti. A. W. Bechtel, September 2, 1946.

- Residence, USDA Station, Marfranc, Haiti. A. W. Bechtel, September 2, 1946.
- A row of Castilla, USDA Station, Marfranc, Haiti. A. W. Bechtel, September 2, 1946. (Photo missing)
- Pueraria thurnbergiana vs. pueraria phaseoloides. P. th. is a more rapid grower but is here distinguishable because of its insect-chewed leaves. USDA Station, Marfranc, Heiti. A. W. Bectel, 9/2/46. (Photo missing)
- Cover crops, knee deep in Pueraria phaseoloides. USDA Station, Marfranc, Haiti. A. W. Bechtel, 9/2/46. (Photo missing)
- Strnagling effects of climbing Derris on Hevea brasiliensis. USDA Station, Marfranc, Haiti. A. W. Bechtel, 9/2/46. (Photo missing)
- Derris elliptica smothering of Hevea brasiliensis. USDA Station, Marfranc, Haiti. A. W. Bechtel, 9/2/46. (Photo missing)
- Transplanting of high topped budded stumps. Plant at left 93" above ground; 1st branch from stump at 90'; D.B.H. 1-6". Plant at right 99" above surface; 1st branch from stump at 97 1/2"; D.B.H. 1-3". USDA Station, Marfranc, Haiti. A. W. Bechtel, 9/2/46.
- Plant budded in nursery and left there until brown wood appeared at 6 1/2 ft. Topped and transplanted to field at height shown. New shoots are appearing near top stump end. Advantages and disadvantages listed. USDA Station, Marfranc, Haiti. A. W. Bechtel, 9/2/46. (Photo missing)
- Transplanting high topped budded stump portion above surface of land - 72". Distance between surface and topmost branch (the one capable of becoming the future tree trunk) - 66". D.B.H. 3". USDA Station, Marfranc, Haiti. A. W. Bechtel, 8/2/46.

Photographic Records of the Beginning Operations of the Development of the SHADA Plantation, Grande Anse Division at Source Chaude, Haiti by R. J. Seibert;
(2 additional copies of legends)

- Plate I. SHADA Plantation No. I, Grande Anse Division, located at Source Chaude on the "Bras Bauche" of the Grande Anse River. Primary stages of camp construction. Note Mr. F. E. Bradshaw, Manager of the Grande Anse Division of SHADA on the left. In order that earliest possible weather data could be observed at this location, the U.S.D.A. Coop. Rubber Plant Field Station, Marfranc, set up the rain gauge and instructed a reliable SHADA employee to keep accurate records. D41-16. November 18, 1941.

- Plate II. The SHADA, Source Chaude Plantation, is located 10 miles by trail from the nearest settlement, Chambellan. There were no roads and all materials, supplies and food had to be head-loaded in from the main road at Chambellan. The beginning days were spent, using tents and make-shift shelters for shelter and sleeping quarters. D41-17. November 17, 1941.

- Plate III. Foreman quarters were made with corrugated iron sides which were gradually replaced by masonry. The upper portion of the buildings are left open and screened to insure ventilation. "Picnic" tables were constructed for the mess. D41-18. November 17, 1941.

- Plate IV. "KY PY" or straw house was built to temporarily house the Overseers. Mr. Andre Rouzier, Construction overseer, stands at the entrance. The thatching material, "Vetivert", Anatherum zizanioides is a most satisfactory type of thatch. The grass is very resistant to rot and lasts for several years. D41-30. January 12, 1942.

- Plate V. One of the seedling nurseries near the river at the Source Chaude, SHADA Plantation. Note the "Bunds" on the gentle sloping land to prevent serious washing during extremely heavy rains. The soil is of good friable, lateritic type. D41-33. January 12, 1942.

- Plate VI. Central camp site of the Source Chaude plantation. Note nursery development in foreground. The hillsides are being planted along the contour. The natural vegetation is a second growth, rather old. Numerous mango trees are found throughout the entire area, and, in fact, form the largest trees. Other introduced trees, as the "Rose apple", Eugenia jambos, are very abundant in the area. D41-35. Jan. 1, 1942.

- Plate VII. Because of the very bad road between Jeremie and Port-au-Prince, SHADA has obtained this cabin cruiser as an easier means of transportation and for hauling light cargo between the two points. The cruiser is 50 feet long, powered with a Catipillar Diesel engine. D41-27. January 12, 1942.

- Marfranc Sta., 8/19/41 (Photo from air)

- Villaire, 8/19/41 (Photo from air)

- Closer view of Marfranc from the air, 8/19/41.

Photos of Hevea Seeds:

- GA273-1 - GA-273-4; GA-607-1 - GA-607-8; GA-823-1 - GA-823-8; GA-1191-1
- GA-1191-6; GA-1285-1, GA-1328-1 - GA-1328-8; GA-1347-1 - GA-1347-6;
GA-1493-1 - GA01493-7; GA-1941-1; GA-1502-1 - GA-1502-8; GA-1666-1 -
GA-1666-8; GA-1679-1 - GA-1679-8; GA-1785-1 - GA-1785-8; GA-1952-1 -
GA-1952-4; GP-4-1 - GP-4-7; GV-49-1 - GV-49-4; GV-55-1 - GV-55-7;
GX-92-1 - GX-92-5; GX-101-1 - GX-101-8; GX-102-1 - GX-102-7; GX-137-1
- GX-137-4; GX-157-1 - GX-157-22; GX-931-1 - GX-931-8.

Bundle No. 6
Photos

Enclosure No. 2; Dispatch 4989 of 7/12/41; sent from Am. Embassy, Rio de Janeiro,
Brazil; Borracha. Received on 8/27/1941:

- Sernambi de Cameta. Borracha virgem, 50% de borracha seca.
- Sernambi-ilha, com areia. 25 a 30 % de borracha seca, 40% de areia.
- Bola de Terra. 5% de borracha seca. Terra, terra + terra.
- Fina-Acre. 85 - 90% de borracha seca.

Lancetilla, Honduras. August 27, 1941:

- 1) Firing the smokehouse, showing furnace and back of smokehouse.
- 2) Smoke house.
- 3) Upperportion smokehouse.
- 4) Lower portion smokehouse.
- 5) Sheeting rubber.
- 6) Sheeting rubber.
- 7) Section #24, Hevea trees cleaned for seed collection.
- 8) Tree #113, Section #24, best yielding tree in all plantings.
- 9) New nursery area.
- 10) Planting seed.
- 11) General view. New nursery planting.
- 12) General view, new nursery.

La Ceiba, Honduras:

- R-211. Budder at work.
- R-212. Same as 211.
- R-213. Note Coconut shell as cup.
- R-214. Same as 213.

Firestone Nursery, San Alejo, Honduras. (Pictures submitted with Monthly Report of December, 1941, from E. T. Stanwood, Tela, Honduras.):

- Germinating bed, Firestone Nursery, San Alejo, Honduras. 12-22141. (1)
- Planting Liberian seeds. Firestone Nursery, San Alejo, Honduras. 12-22141. (2)
- Liberian seedlings at San Alejo. Firestone Nursery. (3)
- Seedling beds, Firestone Nursery, San Alejo, Honduras. 12-22141. (4)
- Firestone Nursery, San Alejo. Sr. Cordova, Mr. Halldersen. (5)
- Firestone Nurseries, San Alejo, Honduras. Sr. Halldersen. (6)

Pictures submitted with Stanwood's letter of June 21, 1941:

- BS-Area #1 - GV. 42 - rows 2 and 3 - foreground Lancetilla - seed background. June 1, 1941. (1)
- Cross-walk in Section #24. Seedling Area #2. Lancetilla. June 1, 1941. (2)
- Row #24 Lancetilla seedlings. Section #24. June 1, 1941. (3)
- Stumps - GV 42 - Stump area #2. June 14, 1941. Jack-bean interplanted. (4)

- June 14, 1941. Lancetilla. Area BS 2. Shipment #1. Bud-stumps clone GV-42. (5)
- Philippine shipment #2. foreground - hote percent of germination. June 14, 1941. Lancetilla. (6)
- Lancetilla, June 14, 1941. Brazilian seed shipments #1 and #2 under irrigation. (7)
- Clone GV-42, Area # BS. Lancetilla. June 14, 1941. (8)
- Bud-stumps in Area # BS 2. Lancetilla. June 14, 1941. Clones GA-49, GV-21. (9)
- Bud-stumps. Area #2. Lancetilla. June 14, 1941. Shipment #1. (10)

Photos from Lancetilla Station, Honduras in letter from E. T. Stanwood of January 26, 1942:

- Factory - Lancetilla, Honduras, December, 1941. (1)
- Factory - Lancetilla, Honduras, December, 1941. (2)
- Seedling stock suitable for budding. Lancetilla, Honduras. December, 1941. (3)
- Budding at Lancetilla, Honduras, December, 1941. (4)

Photographs submitted with letter of March 4, 1942 from E. T. Stanwood, Honduras:

- R-33. Mexican seedling area under irrigation, L-1, 2/27/42.
- R-34. Mexican seedling area in background, budded stumps in foreground. L-2, 2/27/42.
- R-35. General view, Mexican seedling area. L3, 2/27/42.
- R-36. General view, now budwood and seedling area adjoining Area #4. Multiplication Garden. L4, 2/27/42.
- R-37. Area #4, Multiplication Garden. Mr. O'Donnal inspecting budding of Philippine shipment #1. Two rows of material propagated locally be-

tween Philippine material. L5, 2/27/42.

- R-38. Irrigation system operating in Area #4, Multiplication Garden. L6, 2/27/42.
- R-39. Packing shed constructed February, 1942. Firewood and sawdust stored in rear. L7, 2/27/42.
- R-40. Seedlings of Mexican origin. L8, 2/27/42.
- R-41. Mr. O'Donnal inspecting clones #GA-1279. Clone #GX-423 from Philippine shipment #3 at his back. L9, 2/27/42.
- R-42. Irrigating Mexican seedling area. Note light foreground not yet irrigated. L10, 2/28/42.

- R-227. Drainage Canal, Stanwood, Aycock, Lindelie, and Royne.
- R-228. San Alejo, Lancetilla seedlings, 1 year old, Stanwood and Aycock.
- R-223. San Alejo. Land cleared and planted to Citronella Grass, stumps to be placed in this area October 1, 1942.
- R-224. San Alejo. Miscellaneous clonal stumps planted in Citronella Grass area.
- R-225. San Alejo. Staking area for 6,000 clonal stump planting.
- R-226. Drainage canal, recently dry.
- R-215. Same as 213.
- R-216. Same as 213.
- R-217. View of smoke house.
- R-218. Fireplace to smokehouse.
- R-219. View of smokehouse.

- R-220. Inside view of smokehouse.
- R-221. Inside of smokehouse.
- R-222. Seedlings that were budded.
- R-244. Exterior view of smokehouse.
- R-245. Firing the furnace in back of smokehouse.
- R-248. Note system of seiving latex in one operation.
- R-249. Interior of smokehouse.
- R-252. One year seedling area, Lancetilla.
- R-253. 15 year Hevea brasiliensis trees in Section 24. (Photo missing)
- R-254. Diseased African clonal seedlings, Turrialba.
- R-255. Group No. 1 clone, Turrialba.
- R-256. Note advance condition of bud, Clone GA-352 from coconut grove.
This condition general-104 established from 150 received.
- R-257. Group No. 1 clone, Turrialba.
- R-258. Note high degree of resistance on this Brazilian clone.
- R-259. General view of nurseries, Turrialba.
- R-260. Note evidence of stunting from oil content of oil emulsion spray,
Turrialba.
- R-261. A group No. 1 clone at Turrialba. Note disease damage.
- R-262. Group No. 1 clone, Turrialba.

- R-263. Planting and tamping stump at General Solis' Multiplication Garden, Ceiba.
- R-264. Planting budded stump in General Solis' Multiplication Garden, Ceiba.
- R-265. Digging stump of unknown clones at General Solis', Ceiba.
- R-266. Planting stumps at General Solis' Multiplication Garden, Ceiba.
- R-267. Stumps at General Solis' Multiplication Garden, seedlings in background.
- R-268. Seedlings at Florida Farm Standard Fruit Company's, Ceiba.
- R-269. Digging stump at Orange Farm Standard Fruit Co., Ceiba.
- R-270. Budded seedlings at Orange Farm Standard Fruit Co., Ceiba.
- R-271. Stumps dug at Orange Farm and ready to be transferred to Florida, Ceiba.
- R-272. Planting budded stumps from Orange Farm at Florida Standard Fruit Co.'s Multiplication Garden, Ceiba.
- R-273. Standard Fruit Co.'s Multiplication Garden at Florida. Stump planted and patch shaded with dry grass.
- R-274. Stump planted at Florida Farm, Ceiba.

Mexico: (Photos received from Albert J. Gundersen in his letter of March 18, 1942, from Tapachula, Chiapis, Mexico, to Dr. Rands):

- Hevea seedling transplanted from Gundersen Nursery, Tapachula, Chiapis, Mex. Nursery planted December 21 - 25, 1941. Seedling transplanted to cafetal February 5, 1942. Photo taken about March 1, 1942 by Mr. Gundersen. (1)
- Hevea seedling transplanted from Gundersen Nursery, Tapachula, Chiapis, Mexico. Nursery planted December 21 - 25, 1941. Seedling transplanted to cafetal February 5, 1942. Photo taken about March 1, 1942 by Mr. Gundersen. (2)
- Gundersen Hevea Nursery near Tapachula, Chiapis, Mexico. Planted December 21 - 25, 1941. Seed from El Palmer, Cozolapa, Mexico. By Stadelman. Photo taken about March 1, 1942. Half of nursery was shaded; half unshaded. Photo shows portion of each half. Elevation: 2300 ft. Photo by Mr. Gundersen. (3)
- A. J. Gundersen Hevea Nursery near Tapachula, Chiapis, Mexico. Planted December 21 - 25, 1941. Photo taken about March 1, 1942. Portion of shaded and unshaded nursery area shown. Seed from Cozlapa (El Palmar), Oaxaca by Stadelman. Photo by Mr. Gundersen. (4)
- A. J. Gundersen Hevea Nursery near Tapachyla, Chiapis, Mexico. Planted December 21 - 25, 1941. Photo taken about March 1, 1942. Note: $\frac{1}{2}$ of nursery was shaded. Photo shows portion of shaded and unshaded nursery. Elevation: 2300 ft. Photo by Mr. Gundersen. (5)
- Gundersen Hevea Nursery, Tapachula, Chiapis, Mexico. Planted December 21 - 25, 1941. Photo taken about March 1, 1942. One of largest seedlings in unshaded portion of nursery. (6)

Photographs taken by Jose Vera Santos (Visiting Philippine Student) On the occasion of the visit August 7 of the Minister of Agriculture to Campo Experimental, El Palmar:

- Gallardo, Lawyer Montenegro, Marto Gomez (Minister of Agriculture). T. D. Mallory Argote, Mahogany Joe (Friend of Gomez') Paredes, (Ejido Development). Peres, Morillo Safa (standing). (1)
- Administration building from South. (2)
- Rear view of Administration building from vegetable growing area. (3)
- Mallory demonstrating planting of budded stumps of the 1st consignment of Ford clones of Mexico (From coconut grove, Florida). (4)

- A typical level area at El Palmar. The soil here is very rich and trees make good growth as can be seen in the picture. (4 dupl. listed with 60B) (60A)
- A clear portion of the nursery site at El Palmar. (4 dupl. with 60A) (60B)
- Clearing for a clone plot at El Palmar. (60C) (4 dupl. with 60D) (1 loose dupl.)
- Sorting of Hevea seed for planting and export. Seed collecting from El Palmar trees. (60D) (4 dupl. with 60C)
- Dr. Thomas D. Mallory demonstrating proper method of planting budded stumps. The stump being planted is one of the first consignments of 4 clones sent to Mexico via Coconut Grove, Florida. (60E) (6 dupls.)
- A view of the road between Cozolapa, Oax., and El Palmar. The route over which materials for the construction and development of the El Palmar Station had to be taken. Recently a satisfactory road has been constructed. (60F) (6 dupls. with 60G)
- A view of the plantings at the El Palmar Station looking north. Administration building on the left. Equipment shed in the right center. Laborer's houses in the background. (60G) (6 dupls. with 60F) (1 single dupl.)
- Another view of the administration and staff quarters building at El Palmar. (60H) (1 single dupl. & 6 dupls. with 60I)
- Photo taken at the time of a visit of the Minister of Agriculture to the El Palmar Station. Left to right: Sr. Gallardo, Lawyer Montenegro, Ing. Marte R. Gomez (Minister of Agriculture), Mr. T. D. Mallory, Sr. Argote, Mahogany Joe (at the wheel), (friend of Gomez) Parades, (Ejido Development) Perez, Ing. Eduardo Morillo Safa (standing). (60I) (1 dupl. single & 6 dupls. with 60H)
- Hevea brasiliensis tree in the old planting at El Palmar, Veracruz, Mexico, being tapped. Sr. Vicente Fanatta in the foreground. (60J) (6 dupls. with 60K)
- Coagulated blocks of rubber from the older trees at El Palmar. The blocks are being weighed on the scale in the center. (60K) (6 dupls. with 60J)
- A typical level area at El Palmar. The soil here is very rich and trees make a good growth as can be seen in the picture. (60L)

Indle No. 7
otos, negatives

- A clear portion of the nursery site at El Palmar. (61A)

Rubber Plant Inv.:

- Looking north-west by west into Anticline Valley with Water Bearing Strata, 1 mile south of Parras, Coah. (Pl. 1, No. 1)
- Upstream view of Rio Nazas at Trinidad Crossing of Durango-El Paso Highway, October. (Pl. 1, No. 2)
- A $3\frac{1}{2}$ in. rain in Oct., in Torreon, duration 24 hrs. (Pl. 1, No. 3)
- Fallen ('Melted Down') adobe houses as result heavy 'cloudburst' at Bermijillo, Drg., September, 1943. (Pl. 1, No. 4)
- Well ('Noria') with storage tank, trough, and mule-powered pump jack, 2 miles south, Jaral Grande, Coah. (Pl. 1, No. 5.)
- Another well (for stock), 2 miles west of Conejos, Drg. (Pl. 1, No. 6)
- Deep Arrovo on sloping Alluvium over bedrock, Parras, Coah. (Pl. 1, No. 7)
- Monument between Cuencame and Yerbanes, Drg. Dated 1826. (Pl. 1, No. 8)
- Surveying out experimental guayule plot south of Ramos Arizpe, Coah. Elevation about 1400 M. (Pl. 1, No. 9)
- Plowing abandoned land for guayule expt. plot south of Ramos Arizpe, Coah. (Pl. 2, No. 1)
- Our camp while on water land investigations for guayule near Conejos, Drg. (Pl. 2, No. 2)
- Mixed train, between Torreon and Monterrey. (Pl. 2, No. 3)
- Camp in 59 yr. old Pecan Grove, Parras, Coah. (Pl. 2, No. 4)
- Sulphur mine (abandoned) east side sa. Banderas, east of Conejos, Drg. (Pl. 2, No. 5)

- Mapimi, Drg. Looking south. (Pl. 2, No. 6)
- Deep canal (to Zaragoza) between Noe and Bermijillo, Drg. 10 ft. alluvium over salty alluvium, (light colored layer). (Pl. 2, No. 7)
- Looking north over Parras, Coah., alluvium valley and the 'Gap'. (Pl. 3, No. 1)
- Flood irrigation of cotton in Laguna with well water in June. (Pl. 3, No. 2)
- Vegetation on sandy loam alluvium. Neat (north-west) Conejos, Drg. 3" stream from well used as supple well for other well 'Rigs'. Native bathing. (pl. 3, No. 3)
- Mexicans picking cotton in late August. Irrigated with well water. Yield 2 bales per acre. Near Ceballos (east). (Pl. 3, No. 4)
- On road between Saltillo, Coah. and Monterrey. 4000 to 8000 feet rise. (Pl. 3, No. 5)
- Flood irrigation of young cottong in Laguna from well. May. (Pl. 3, No. 6)
- Cutting alfalfa in Laguna in late April. Second cutting. (Pl. 3, No. 7)
- 'Salt-tolerant' shrub on Caleche (gypsum also) alluvium east of Yermo, Drg. (pl. 3, No. 8)
- K.538. Looking south. Saltillo-Torreón paved highway. Characteristic sparse desert shrub, Lechiguilla (*Agave lechiguilla*) and Governor (Larrea tridentata), on level, gravelly and fine (silty) alluvial soils with some caliche at 6" to 1' in the Laguna or desert shrub vegetative zone. Looking south toward "The Gap" which is the entrance of the inner valley which lies immediately north of Parras, Coah. Poor soils for irrigation. (Alt. 4000 to 5000' for most of Laguna region.) (Pl. 4, No. 1)
- Southeast of S. Banderas, east of Conejos, Drg. Salt-tolerant plants, including Larrea sp. and Yucca ssp. on level, gypsum alluvial (?) materials east of Sa. Banderos near Conejos, Drg. Poor soils for irrigation. (Pl. 4, No. 2)
- Looking south from K.17 on Torreon-Palmito gravelled highway. Looking wouth over gently sloping valley from road east of Mapimi, Drg. Mesquite (shrub), Larrea, Cordia Mexicana, etc. Much coarse detrital and gravelly materials in fine alluvial soils. Poor soils for irrigation. (Pl. 4, No. 3)

- Looking southwest from Point West of Bermejillo, Drg. (Pl. 4, No. 4) Larrea, Cordia, Agave spp. dominant. Level, silt loam alluvium. Good to excellent soils for irrigation. Mountain shows a block faulting escarpment front, characteristic of many mountains bordering the deep Laguna 'bolson.' Average annual rainfall is 25 to 30 centimeters equal 1").
- (Pl. 5, No. 1) and (Pl. 5, No. 5). Panorama of the Laguna or Desert Shrub vegetative zone taken from low, rounded, gravelly knoll bordering level, fine alluvium area, and showing another gravelly knoll in the distance on right and S. Banderos (east of Conejos, Coah.) in the background. Sparse growth of Borage spp., Larrea, Ocotillo and others is found on the gravelly knolls, and Larrea, Cordia are dominant on the level silt loam alluvium. To the left of the knoll (in the distance) is found a Hilaria llano (toboso) swale with clay and clay loam soils. The silt loam soil is good to excellent for irrigation and the clay and clay loam soils are poor to good. Browsing and grazing very poor for stock. The Toboso does produce some grazing, though generally of low quality as compared to grama grasses.
- View from mountain (Pl. 5, No. 2) in upper left photo, with Sa. Banderos in the distance. Agave spp., Cacti spp., Candellia (*Euphorbia antisiphilitica*) V. Note contoured vegetative strips on detrital area below mountain and the igneous (basalt) mountain in front of high limestone-shale fault face of the mountain. Some Larrea and grama grass spp. in foreground.
- Sloping, stony, detrital soil area at foot of limestone-shale mountain on east side of mountain (Pl. 5, No. 3) in upper left photo. Candelilla (*Euphorbia* sp.), Sangre de Grada (*Jatropha spathulata*), Larrea, Cacti spp. (*Opuntia* spp. and others), etc. Poor to medium suited soils for irrigation.
- Steep, stony, well vegetated limestone-shale slope on same mountain as above photos showing average size candelilla (used for wax), Agave spp., *Opuntia* spp., and Larrea. (Pl. 5, No. 4)
- West of Cedros 15K., in Zacatecas. Native guayule shrub on gently sloping, shallow (3" to 6") stony, gray, caliche soils in detrital and piedmont limestone-shale lands. Agave spp., Cacti spp., mariola (mostly *Parthenium incanum*) and others are dominant cover. Poor soils for cropping or grazing. (Pl. 6, No. 1)
- North of Cuencame about 5K. Chaparrillo zone in valley end mountain region which lies between the Laguna and Central Mesa region to the south. Mixed stony detrital and fine alluvial materials on very gently sloping relief, with *Opuntia*, Larrea, Cordia and *Acacia constricta* and others. Poor to good soils for irrigation. (Pl. 6, No. 2)

- Between Cedros and Camacho, Zac. View looking south toward east-west mountain range with highest peak in clouds (8000 ft. or more) from point on road halfway between Cedros and Camacho, Zac. Altitude about 6400 ft. Guayule and mariola in foreground with cacti, Larrea, Ocotillo, Agave spp., etc. on shallow, gray, caliche soils. Rainfall 35 to 40 cm. per yr. in Cjaperrillo is most common. Browsing and grazing poor and over 60 acres per animal unit per year are needed. (Pl. 6, No. 3)
- West of Cedros, 15K. in Zacatecas. Another view, looking westward, of undulating to sloping piedmont and detrital area in "home" of the native guayule (here designated Chaparillo vegetative zone) with mountains in distance. In the middle distance note palma, a tall yucca. Above shrub height. (Pl. 6, No. 4)
- Dry-farmed, five to ten bushel per acre corn in the shrub-grass zone on gently sloping, stony, gray, caliche soils (see in ditch bank of road) southwest of San Juan del Rio, Drg. and looking north toward the valley of Rio Nazas; Acacia tortuosa trees in the distance. This area is on the edge of the shrub-grass near the Grassland vegetative zone and is best suited to grazing except, possibly, for the local alluvial areas which have deeper soils and because of position, some chance of diverting runoff water into the fields. The carrying capacity of the range for mature cattle is from 40 to 60 acres per animal, and grazing and browsing are possible the year around. The altitude is about 1900 meters (6300 ft.) and the annual average rainfall is from 40 to 60 cm. Limestone and shale, and piedmont and detrital rock materials from these bedrocks are dominant. (Pl. 7, No. 1)
- View looking southeast from gravelled highway between Mapimi and Palmito, Drg., at K. 93. Broad mesa of limestone and shale (detrital, fine alluvium and piedmont with gently sloping topography. Soils in the foreground are derived from mixed fine alluvium and gravelly, stony materials, and have shallow, calcareous, gray surfaces with caliche at variable depths of 6 inches to 2 feet. Bouteloua spp. (Gramia) grass vegetation is somewhat sparse, with shrubs of Larrea tridentata, Agave spp. and others. Tree mesquite can be seen in the distance in the valley on deeper, dark brown, local alluvial soils. Low mountain ranges in distance. The altitude is 1800 M (6000 ft.) and this is on the upper edge of the shrub-grass zone. Rainfall of 35 to 45 cm. most common in shrub-grass zone. (Pl. 7, No. 2)
- Views along road from the Zarca Mesa to the Rio Nazas (Palmito) Valley. The deep Nazas Valley has cut through the north-south Central Mesa which lies east of the Sierra Madre. Occidental mountain range and high plateau region in Durango. At the summit of Cuchillas de Zarca (altitude 7500 ft.) shown in (Pl. 8, No. 1) are found oaks and juniper (tree-grass zone) and Bouteloua spp. (grama) grass. Topography is steep on the Nazas side of the mesa. Very shallow, gray, caliche soils are dominant on this relief and they are derived from limestone-shale rock materials.
- Shrubs are mixed with grasses on the slope and are in greater abundance with decreasing altitude as shown in (Pl. 8, No. 2), which is a view of

the narrow mesa tops in the distance occur beyond the Rio Nazas.

- (Pl. 8, No. 3) shows a cross-section of a small valley on the road to Inde, at an altitude of 5500 feet, which drains in the Rio Nazas. Tree mesquite, *Bouteloua* spp., and Cacti are found on the gravelly and stony detrital and general (and deep) alluvial materials. Igneous, as well as limestone, rocks are common. Some shallow, reddish-brown soils, derived from igneous rock material were noted on smoother relief, as well as the usual shallow, caliche soils from limestone-shale derived materials. Shrubs are more dense on the slopes. The western rim of the Cuchilla de Zarca can be seen at the extreme upper right. Dominantly grazing (and browsing) land with a carrying capacity of 40 to 60 acres per animal unit.
- (Pl. 9, No. 1) View at K. 105 on Mepimi-Palmito road at elevation of 6600 ft., showing Dr. Gentry examining plant, *Ephedra* spp., beside a small guayule shrub which is growing on sloping, shallow, gray, caliche and limestone-shale soils on the low hills on the eastern side of the Zarca Mesa. Free lime is usually absent in surface soil in Grassland as compared to shrub-grass and Chaparillo shallow soils. 40 to 60 acres per animal unit.
- (Pl. 9, No. 2) The old country town of Sombrerete, Zaratecas in the "breaks" and immediately south and west of the broad and smooth Central Mesa of Durango (elevation 2380 meters).
- (Pl. 9, No. 3) A poor photo of guayule experimental (indicator) planting, 9 kilometers southeast of Allende (or Ayende). Very gently sloping, deep (1 to 2 ft.), reddish-brown, clay loam, and acid soils from igneous rock detrital and piedmont material. Newly plowed land in foreground, with grassland on left with *Bouteloua gracilis* and other grama spp. such as *hirsuta*, etc., and finally with 15 to 20 bushels per acre corn on extreme right. Lands are called "red rock" grama grasslands. Cerro Camon in distance. Medium to good semi-arid agricultural soils. 25 to 35 acres per animal unit.
- (Pl. 9, No. 4) Deep, silt loam alluvial fill materials with friable grayish brown soils in one of the broad valleys in the smooth Mesa north of La Zarca. Tree mesquite and grama grasses. Fine grazing country with 'year-round' carrying capacity of 35 to 50 acres per animal unit. A very few of the more favorably suited and lighter-textured alluvial soils might be used for "dry-farmed," subsistence crops.
- (Pl. 9, No. 5) Looking south from Cerro de la Bufa near Zacatecas. Grass-land is found on smoother relief with shrub-grass on the detrital and mountainous areas. Mostly shallow, reddish-brown and acid soils on the smoother relief. 35 to 45 acres per animal unit. (Weather station located near top of this mountain, elevation 9000' plus.)
- (Pl. 10, No. 1) Looking north toward Cerro Camon (extreme left distance) from mountain 5 miles west of Rancho El Ojo. Gently sloping relatively young lava flows in foreground with shallow rocky, reddish-brown soils

with much Opuntia and grama grass vegetation. "Swales" have shallow, rocky, reddish brown soils and also dark brown, deep alluvial soils, with grama grass and Acacia tortuosa. Limestone-shale mountain on right. Soils dominantly unsuited for cropping. Elev. 2000 M. 30 to 40 acres per animal unit.

- (Pl. 10, No. 2) Grama (mostly *Bouteloua gracilis*) grass, Opuntia and Acacia on shallow, reddish-brown and stony soils derived from igneous rock materials southwest of San Juan del Rio. Characteristic vegetation, same as above photo, on soil sites less suitable for mostly 'all' grass vegetation because of shallowness of soil or steepness of topography, etc. Opuntia usually more common on shallow, stony and strongly sloping relief and Acacia common in "cienigas." Soils are dominantly unsuited for cropping. Elevation 1900 M. Vegetation like this mostly found in the middle and lower Grassland Zones. 35 to 40 acres per animal unit.
- (Pl. 10, No. 3) Oak - grama grassland above a shrub-grass zone southwest of Villa Union and east of Zaragoza and below the smooth Grassland Plain. Elevation 7400'. Oaks found mostly in shallow (gray-caliche and reddish brown) soils and adjacent alluvial areas on western "breaks" of Zaragoza part of the Central Mesa. All three photos show three common variations of Central Mesa grassland vegetation caused in part by relief, shallow soils and elevation. Rainfall 40 to 55 cm. is most common in Grassland Zone. 30 to 40 acres per animal unit.
- (Pl. 11, No. 1) Well grassed, but heavily dissected, southern Zarca Mesa looking southeast from K. 136 on Mapimi-Palmito road north of Tio Nazas Valley. Altitude 7000'. Above the shrub-grass zone and below the oak-juniper-grass (tree-grass) zone of Cuchilla de Zarca. 45 to 50 acres per animal unit.
- (Pl. 11, No. 2) Looking west over old headquarters, Ranch Mimgrera, northwest of La Zarca. Low mountains with juniper and oaks and grass in the distance. Elevation 2000 M. Shallow well water and a few springs are sufficiently abundant to provide a well-watered range in most of the Grassland and Shrub-Grass Zones. 35 to 45 acres per animal unit.
- (Pl. 11, No. 3) Looking northeast over the smoother Central Mesa and the mountain range southwest of Yerbanes, Drg. which borders the Grassland on the north. Deep, friable, gently sloping, reddish-brown, slightly acid soils, with mildly developed caliche sub soils, and having a 10 to 15 bushel crop of shocked corn. *Bidens* spp. (white and yellow rayed) sunflowers and weeds abound because of late, heavy rains in September. 30 to 40 acres per animal unit.
- (Pl. 11, No. 4) View of Aquinaldo, looking west, and juniper-pine-oak and grass "capped" mountain range west from Villa Madero. Elevation 7500 ft. Harvesting field beans in late October. Many *Bidens* spp. (weeds). Deep, reddish-brown soils. 30 to 40 per animal unit.

- (Pl. 11, No. 5) A portion of the "Cieniga" - lake playa - region south of Santa Lucia. Heavy October rains have inundated parts. The soils are from alluvial sediments and have dark gray, somewhat "salty" soil surfaces and mottled clay subsoils. Coarse, sedgy and annual grasses and a few grama grasses (of a very different species) are dominant. Some Acacia and Tree Mesquite. Opuntia and Bouteloua gracilis on well-drained lava flows which are found in the "cieniga" region. Soils dominantly poorly suited for cropping and produce fair to good grazing; 40 to 45 acres per animal unit.
- (Pl. 12, No. 1) These photos show characteristic portions of the transition zone between the lower elevations with grass, to the east, and the higher mesas or plateaus and mountains with trees, to the west. The lower altitude of tree (pine, in upper photo, and oak in Nos. 2 & 3, and juniper in No. 4) and grass zone, is 1900 M. in the north of Durango and 2300 M. elevation in south Durango and northwestern Zacatecas. Upper elevations are, approximately, from 2100 M. to 2500 M. Transition zone is in part on higher mesa country than that found in the grassland and in part on the "breaks" into the Nazas, Florida, and Pacific drainage systems immediately east of Sierra Madre plateau escarpment and mountains, as seen in the distance in the No. 2. Topography is dominantly sloping to hilly. Soils are deeper where derived from igneous rock material, as in the No. 4, as compared to shallow, dark gray (free lime surface) caliche soils of Nos. 1, 2, 3. Some soils with definite acid, gray surface and yellowish-brown subsoil, of 6" to 2' in depth, are in evidence.
Pl. 12, No. 1 is 16 miles west of Durango, Altitude 7800 feet. Pl. 12, No. 2 is looking west into grass valley, 6 miles east of Otinapa, altitude 7500 feet. Pl. 12, No. 3 is on Divide, between Lodemena and Corrales Northeast, 8100 feet. Pl. 12, No. 4 is looking north to Torreon de Canas, in distance on right, 6000 feet.
- (Pl. 12, Nos. 3, 4) Grass vegetation dominantly more coarse and "bunchy" except for Nos. 3, 4, with much Muhlenbergia spp., etc. Dominantly unsuited to agriculture because of cool summer temperature, topography, aridity, shallow soils, etc. Rainfall is 50 to 65 cm. Grazing and forestry are the main uses. Carrying capacity from 25 (No. 4) to 70 acres per animal unit. Water for stock is difficult to provide evenly in all parts of the range, and grasses (not Bouteloua) are usually less nutritious or palatable.
- (Pl. 13, Nos. 1, 2, 3) Traveling westward from Durango on a poor graded road, one traverses a mesa of 7500 to 8000 feet which is a part grass on the east, and tree-grass on the west, with the exception of the stream terrace north of Otinapa at the base of the Sierra Madre Plateau (see No. 1). Some summer oats, corn and beans are grown on the deep, reddish-brown, sandy clay loam soils derived from igneous terrace materials north of Otinapa. The very steep to strongly sloping lands bordering the plateau have shallow (largely noncaliche) soils with acid gray surfaces and brownish-yellow subsoils. Smoother areas have deeper soils, with similar horizons or layers. Little meadow or "Cieniga" areas occur in the few scattered depressions in the plateau. The ground cover has a few coarse bunch grasses and a much greater variety of shrubs, pines and oaks than found at lower elevations in the tree-grass zone. Even relatively inac-

cessible areas are being "timbered off" rapidly. Grasses are usually of medium to low quality for grazing, and the carrying capacity is as low as the lower Shrub-Grass and Chaparillo Zones. Farming is practically unknown. Horses seem to do better than other stock, just as mules seem to do slightly better than other stock in the Desert Shrub and Chaparillo Zones. Timber production is the major use of these lands. Rainfall is from 70 to 110 cm. and the mean-summer temperature at 2200 to 2500 M. is 16 to 18° (61° to 65°F.) C. Snows and some snow cover are common in winter. Fir and spruce are found at altitudes of 3000 M., indicating a subalpine or taiga type of climate. Pl. 13, No. 1 is looking north from 'Tree' Mesa on Sa. Madre Plateau to Grass ('Llano') Terrace of Otinapa. Pl. 13, No. 2 is south of Otinapa, same plateau (8000 feet) as No. 1. Pl. 13, No. 3 is saw mill (pine) on Sierra Madre Plateau at Chicle, 8400 feet.

Blueprint:

- Durango State and adjacent areas - Topography, vegetation, etc. (Blueprint)

Striker Report:

- Torren, 1944, Plate 1, 9 negatives. Striker's detailed office report of land investigation in Durango, etc. 1943-44 until Rubber Plant Inv.
- Torren, 1944, Plate 2, 8 negatives. (Only 7 prints are Plate 2. 1 negative in this folder for which there is no print in the report.)
- Torren, 1944, Plate 3, 8 negatives.
- Torren, 1944, Plate 4, 4 negatives.
- Torren, 1944, Plate 5, 5 negatives.
- Torren, 1944, 4 negatives, Plate 6.
- Torren, 1944, Plate 7, 2 negatives.
- Torren, 1944, Plate 8, 3 negatives.
- Torren, 1944, Plate 9, 5 negatives.

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Photos, negatives

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- Torren, 1944, Plate 10, 3 negatives.
- Torren, 1944, Plate 11, 5 negatives.
- Torren, 1944, Plate 12, 4 negatives.
- Torren, 1944, Plate 13, 3 negatives (no photo).

Nicaragua:

- Rubber trees, Hevea brasiliensis, have been budded with disease resistant stock four and a half feet above the ground in a trial to determine the most favorable height for top working. February 7, 1945. Servicio Tecnico Agricola, Cukra, Nicaragua. Photo Mitchell.
- Rubber tree, Hevea brasiliensis, has been top worked by budding with disease resistant stock at height of six feet. Bud sprout is at the left. Lewis Long is trimming off a sprout from the trunk at right. February 7, 1945. Servicio Tecnico Agricola, Cukra, Nicaragua. Photo Mitchell.
- Rubber tree, Hevea brasiliensis, has been top worked by budding a disease resistant stock on a high yielding trunk. February 7, 1945. Servicio Tecnico Agricola, Cukra, Nicaragua. Photo Mitchell.
- Rubber tree, Hevea brasiliensis, has been top worked by budding disease resistant stock on a high yielding trunk. February 7, 1945. Servicio Tecnico Agricola, Cukra, Nicaragua. Photo Mitchell.

Pictures by Mr. Demmon sent in to this office with letter of May 24, 1941 to Dr. Brandes:

- Clump of Hevea trees, remnants of an old nursery, planted in 1906, at site of Manhattan Rubber Co. plantation, near Cukra Creek, Nicaragua. March 22, 1924 photo was taken. (70A)
- Clump of Hevea trees, remnants of an old nursery, planted in 1906, at site of Manhattan Rubber Co. plantation near Cukra Creek, Nicaragua. Photo taken March 22, 1924. (70B)
- Six months old Hevea seedlings in a new clearing, about 4 miles from Cukra Landing, near Pearl Lagoon, Nicaragua. Site of old Manhattan Rubber Co. plantation. Photo taken in March 22, 1924.
- Experimental tapping on one of the Hevea trees planted in 1901 by the Manhattan Rubber Co. near Cukra Creek and Pearl Lagoon, Nicaragua. (Indications were that yield was average as compared with Far East). Photo taken March 22, 1924. (70C) (Photo not present)
- View of crown of Hevea rubber tree planted in 1901, by Manhattan Rubber Co. near Cukra Creek, Nicaragua. Photo taken March 22, 1924. (70D)

Panama: List of photographs sent in by Mr. C. L. Luedtke with letter to Dr. Rands dated April 8, 1942:

- (1) View of Main Street in La Palma, captial of the Province of Darien. February 16 - 19, 1942.
 - (2) Another view of No. 1 - main street in La Palma, Captial of Province of Darien. February 16 - 19, 1942.
 - (3) View of La Palma, capital of the Province of Darien; at low tide. February 16 - 19, 1942.
 - (4) View on the Tuira River, between La Palma and El Real, Province of Darien. February 16 - 1942.
 - (5) Landing at El Real. February 16 - 19, 1942.
 - (6) El Real, on the Tuira River. Yacht "Dolphin" at anchor. February 16 - 19, 1942.
 - (7) Another view of El Real, from the Tuira River. February 16 - 19, 1942.
 - (8) Modern flat bottomed barges on the Tuira River, above El Real. February 16 - 19, 1942.
 - (9) Type of dugout with outboard motor, used on the Tuira River, above El Real. February 16 - 19, 1942.
 - (10) Another view of No. 9 - dugout transportation on the Tuira River. February 16 - 19, 1942.
 - (11) Castilloa rubber trees on the Yavisa Trail, formerly a part of an old abandoned rubber plantation opposite Pinogana, on the Tuira River. February 16 - 19, 1942.
 - (12) Another view of a Castilloa rubber tree along the Yavisa Trail. February 16 - 19, 1942.
 - (13) Cutting a trail through the mangrove forest, to avoid snakes in the river at low tide. February 16 - 19, 1942.
- Castilloa seed pods showing how they are attached to the branch. Photo by George L. Seeley, Panama, May 31, 1942. (Letter attached)

Photographs sent in letter to Dr. Rands from Mr. C. L. Luedtke, February 17, 1942, Panama:

- (1) Brazilian rubber seedlings at Palmira.
 - (2) Brazilian rubber seedlings at Palmira.
 - (3) Largest tree in Reynolds Grove, 34 inches in diameter, 3 feet above ground. Never had been tapped until the day I took this picture.
 - (4) September 2, 1942. Unknown type of rubber tree on Reynolds farm. Bark like Birch tree. Expect to get seed from this tree in about a month.
 - (5) Looking up two dead Hevea trees in Reynolds Grove.
-
- Rubber tapper at work with special tapping knife that scores the bark deep enough to cause the flow of latex without damaging tree when properly used. September 24, 1946, All Weather Plantation, Gatun Lake, Panama. Photo Mitchell.
 - Rubber tree (Hevea brasiliensis) with root stock from seed collected locally, tapping panel (ground level to 6 feet) of high-yielding clone from the Far East, and top from selected disease resistant clones from Belem, Brazil. September 24, 1946, All Weather Plantation, Gatun Lake, Panama. Photo Mitchell.
 - 10 photos with letter dated October 17, 1942 regarding investigator dealing with seed germination, from R. D. Rands. Subject: Means for decreasing the time and increasing the percentage of germination of Hevea seeds which have lost vigor due to storage, loss of moisture, or other conditions. (including negatives) (also 18 x 10 enlargement)
 - Hevea brasiliensis, first flower in December, 1941. Submitted by C. Z. Submitted by Dr. Julius Matz, Canal Zone Experiment Gardens, Pedro Miguel with his letter to E. W. B. of April 14, 1942.

Peru:

- The completed budding will now undergo a period of 21 days before opening. During these three weeks the bud-patch will unite with the bud-stock to produce what is then known as a budded stump. Rubber Plant Investigations, D-6124. RJS. March 21, 1945. (73A)
- By carefully returning the flap to its original position the bud-patch is held in a position so that its cambium is in contact with the cambium of the budding stock where they may grow together. The flap and budpatch are held firmly in place by wrapping the budding with a parafined cloth tape. Rubber plant investigations, D-6122, RJS. March 21, 1945. (73B)
- After wrapping the budding a block of parafine is rubbed over it to thoroughly seal the budding against the entrance of any water. Rubber Plant Investigations, D-6122, RJS. March 21, 1945. (73C)
- Preparing the panel for inserting the bud-patch by gently prying the flap of bark away from the cambium with the spatula end of the budding knife. Rubber Plant Investigations, D-6118, RJS. March 21, 1945. (73D)
- Having pulled down the bark flap the bud-patch is carefully inserted between the flap and the exposed cambium of the budding stock. Rubber Plant Investigations, D-6121, RJS. March 21, 1945. (73E)
- The sliver of wood which was cut along with the bud needs to be carefully removed after trimming and preparing the bud-patch for insertion into the flap of the budding stock. Rubber Plant Investigations, D-6119, RJS. March 21, 1945. (73F)
- The budpatch is now ready to be inserted carefully into the flap of the budding stock. Rubber Plant Investigations, D-6120, RJS. March 21, 1945. (73G)
- The bud, having been cut from the bud-stick includes also a sliver of the wood beneath the bark. Rubber Plant Investigations, D-6116, RJS. March 21, 1945. (73H)
- In preparing the bud-patch it is necessary to carefully trim the edges of the bud which has been removed from the bud-stick. Rubber Plant Investigations, D-6117, RJS. March 21, 1945. (73I)
- Cutting the panel at the base of the seedling trunk. The flap thus cut for the insertion of a clonal bud prepares the seedling for use as a budding stock. Rubber Plant Investigations, D-6125, RJS. March 21, 1945. (73J)

- Cutting the bud from the clonal bud stick for the preparation of the bud-patch. Rubber Plant Investigations, D-6115, RJS. March 21, 1945. (74A)
- When budwood is cut, a portion of the clone trunk is allowed to remain which contains several buds from which the clone may again sprout out, this time in two places, for the production of more budwood. Rubber Plant Investigations, D-6128, RJS. March 21, 1945. (74B)
- Manuel Bardales has been started with the budding work at Iberia. He is holding a stick of budwood. Rubber Plant Investigations, D-6114, RJS. March 21, 1945. (74C)
- A clone showing good size for cutting back and use for propagation budwood. Rubber Plant Investigations, D-6126, RJS. March 21, 1945. (74D)
- In order to make use of the many green buds towards the top of the plant, cutting of budwood should be preceeded some 5 or 6 days by cutting the petioles as illustrated. This caused the petioles to fall off, making these upper buds available for budding. Rubber Plant Investigations, D-6127, RJS. March 21, 1945. (74E)
- The Iberia seedling nursery, planted May, 1944. SALD made considerable advances during January and February, 1945 due to poor, inefficient spraying which made no effort to spray the young flushes. Some defoliation resulted but few, if any, plants were killed. Rubber Plant Investigations, D-6109, RJS. March 12, 1945. (74F)
- The Iberia seedling nursery as above. Rubber Plant Investigations, D-6110, RJS. March 12, 1945. (74G)
- A portion of the Budwood Propagation Garden, showing the bad weedy condition at the time of my arrival. Rubber Plant Investigations, D-6106, RJS. March 9, 1945. (74H)
- A portion of the Iberia Budwood Propagation Garden after it had been weeded. These stumps were planted July 1, 1944 and have an age of 9 months and are now being used for propagation. Rubber Plant Investigations, D-6113, RJS. March 21, 1945. (74I)
- During the rainy periods the Iberia Air Field is frequently unsafe for heavy planes such as the Catalina which have small landing wheel surface. The Catalina here is being pulled out of a soft spot by some 20 men and the use of both motors. Rubber Plant Investigations, D-6103, RJS. March 8, 1945. (74J)

- Finished tires of natural rubber emerging from the heat mold. November 15, 1947. Goodyear Tire & Rubber Co., Lima, Peru. Photo Mitchell.
 - Rubber "pigs" from the Amazon basin of Peru are weighed in at the tire factory as they arrive from the producers. November 15, 1947. Goodyear Tire & Rubber Co., Lima, Peru. Photo Mitchell.
 - Rubber leaf (Hevea brasiliensis, clone GV-21) showing damage by South American Leaf Disease (Dothidella ullei P. Henn.) July 14, 1945. Estacion Experimental Agricola de Tingo Maria, Peru. Photo Mitchell.
 - Rubber sheets from latex of wild rubber trees drying in the processing shed of a small farm rubber producer. July 18, 1945, Antonio Quesada, Pampas del Sacramento, 92 kms. east of Tingo Maria, Peru. Photo Mitchell.
 - Rubber seedlings from seed collected near Tingo Maria being sprayed with "copper king" to check South American Leaf Disease. February 15, 1944, Estacion Experimental Agricola de Tingo Maria, Peru. Photo Mitchell.
 - Rubber seed (Hevea brasiliensis) germinated and ready for planting. Germination requires from 4 days (for good, fresh seed) to two months. February 15, 1944, Estacion Experimental Agricola de Tingo Maria, Peru.
 - Rubber seed germinating beds of shaded, moist sawdust. Laborers are selecting germinated seeds for planting. Seeds are Hevea brasiliensis collected near Iquitos, Peru. February 15, 1944, Estacion Experimental Agricola de Tingo Maria, Peru. Photo Mitchell.
 - Rubber budding work. A bud from a Ford clone (Hevea brasiliensis F-1710) is placed on a tree of Manuripa sp. 10 months old from seeds collected in the Madre de Dios region, east of Cuzco, Peru. February 18, 1944, Estacion Experimental Agricola de Tingo Maria, Peru. Photo Mitchell.
- Philippine Islands: Photographs by H. H. Bartlett taken at Goodyear Pathfinder Estate, Kabasalan, Zamboanga, P. I., illustrating collection and packing budded stumps of 132 clones brought to Panama and Haiti, April 9, 1941 by Professor Bartlett. Part of shipment reconsigned at Panama to Tela, Honduras. (1 dupl copy of this series of photos):
- Q-13. Digging stumps in the nursery. The seedlings not "stumped" could not be budded because of tight bark or too small size.
 - Q-13a. Digging stumps in the nursery. The seedlings not "stumped" could not be budded because of tight bark or too small size.

- Q-8. Digging stumps at nursery.
- Q-7. Digging stumps at nursery.
- Q-17. Lundberg checking stumps as dug for freedom from root disease.
- Q-14. Checking digging of stumps.
- Q-15. Rechecking stumps as bundled.
- Q-1. Checking stumps in nursery at Pathfinder Estate, Kabasalan.
- Q-12. Checking clone stumps at the nursery.
- Q-9. Checking stumps for bundling at nursery.
- Q-11. Sprinkling clone bundles before sending them from nursery to packing shed (by carrier and then by truck).
- Q-4. Nursery at Pathfinder Estate. Man with single-clone bundle on way to truck. Harry Lundberg, who checked digging of stumps.
- Q-24. Unloading truck-load of stumps at packing shed.
- Q-18. Unloading stumps sent from nursery to packing shed.
- Q-18a. Unloading stumps sent from nursery to packing shed.
- Q-6. Packing shed at Pathfinder Estate. Clone bundles as delivered in wet burlap from the nursery.
- Q-22. Boiling sawdust for use as packing material.
- Q-22a. Boiling sawdust for use as packing material.
- Q-25. Boiling sawdust for use as packing material.
- Q-2. Packing shed at Pathfinder Estate. Shows stumps wrapped in wet

burlap was received from nursery. Also piles of boiled sawdust.

- Q-21. Roots being washed free of earth before packing.
- Q-23. Packing stumps. Mgr. J. C. Huber.
- Q-20. Mgr. Joe Huber and Ebalo finish packing a case. The last shovel-ful of boiled sawdust goes in.
- Q-26. Mgr. J. C. Huber making embossed metal labels for nailing to the inside of a case cover. Each case had a complete inventory on metal tape.
- Q-3. Packing shed at Pathfinder Estate. Completed cases. Manager Joe Huber and assistant Liborio E. Ebalo.
- Q-19. Joe Huber weighing cases.
- Q-19a. Mgr. Joe Huber weighing cases.
- Q-5. Stumps packed for shipment leaving the packing shed for the boat landing on Pathfinder Estate. Mgr. J. C. Huber with son Steve. L. E. Ebalo with Joe Huber, Jr.
- Q-10. Load of cases leaving packing shed for the boat landing. Note mature planting in background, Filipino employees' quarters, narrow-gauge railroad, Rubio the bull, whose history was written in HHB's best doggerel for the Huber children, J. C. Huber, Mgr. of Pathfinder Estate, Ebalo and the Huber boys.
- Q-12. Packed cases on the bull-train, narrow gauge railroad, to the boat landing on Pathfinder Estate.
- Q-16. Cases going to the boat landing.
- Q-27. Part of the shipment aboard the M. S. "Don Isidro", stowed in the 3rd class passengers' quarters where there was shade and a fine cross breeze. Mr. J. C. Huber of the Pathfinder Estate, Kabasalan, Zamboanga, P. I.
- Q-28. Part of the shipment aboard the M. S. "Don Isidro", stowed in the 3rd class passengers' quarters where there was shade and a fine cross breeze. Mr. J. C. Huber of the Pathfinder Estate, Kabasalan.

- Q-29. Part of the shipment aboard the M. S. "Don Isidro", stowed in the 3rd class passengers' quarters where there was shade and a fine cross breeze.
- Q-30. Figurehead of M. S. "Baghdad", (Norwegian, Capt. Nic Thorsen, Fred Olsen Line) on which the shipment travelled from San Francisco to Cristobal. Every possible care was given the cases by the good people of this good ship.
- Q-31. Figurehead of M. S. "Baghdad", (Norwegian, Capt. Nic Thorsen, Fred Olsen Line) on which the shipment travelled from San Francisco to Cristobal. Every possible care was given the cases by the good people of this good ship.

Venezuela: Pictures sent in with letter to Dr. Brandes from Dr. James R. Weir dated January 26, 1941:

- Seedling nursery at San Felipe. Seeds from Summit Canal Zone. Seeds planted October, 1941 by clone garden. Photo Weir, November, 1941. (78A)
- Corner clone garden, San Felipe. Clone stumps from Goodyear, Panama, March 8, 1941. Planted March 13, 1941. Seedlings behind. Photo Weir, November 12, 1941. (78B)
- Felling for 10 acre nursery at Caripito. Thousands of hectares of land like this in the Caripito region, good sandy loam. Venezuela. (raining) Weir, January, 1942. (78C)
- View of a seedling nursery at Caripito, Venezuela. Seedlings large enough to bud. Weir, January, 1942. (78D)
- Section of clone garden at Caripito (State of Monagas) Venezuela. Contains clones Av. 33, 49, 152, 352. PB 86, 186, Pil 65, SA 24, Tj 1, 16, War 4. Planted April, 1941. Weir, January, 1942. (78E)
- End stump of a row of Hevea Benthamina pulled from the jungle on the Orinoco, now beginning to grow at Caripito, Venezuela. Weir, January, 1942. (78F)

Misc.

Misc. reports and prints pertaining to the Hevea program.

- Oilseed and Industrial Crops Research Branch. Hevea slides, 35mm,
motion picture film, 1941 - 1953. L. G. Polhamus.

- 16 boxes of color transparencies, 2" x 2", dealing with guayule culture.

- 9 boxes of 16mm film from the Rubber Plant Investigation, U.S.D.A.
(Mexico, Guatemala, and Costa Rica included). Hevea.

- 2 - 6" reels, 16mm film dealing with rubber culture.

- 1 box of lantern slides from illustrations in U.S.D.A. Technical Bulletin
by M. H. Langford. June 30, 1944. (7 slides)

- 1 bundle of 30 photographs of Hevea and other rubber producing plants.

- 13 photographs dealing with guayule culture.

- Appropriation hearings - A folder of copies of the record of appropriations hearings on Emergency Rubber Project, February 24, 1945 and March 26, 1947, 85 pages.
- Budget 1953 - Estimated budget for 1953 for Rubber Project, copy of summary of appropriations, fiscal years 1951, 1952, and 1953. About 40 pages.
- Budget 1952 - Contains reports of status of funds at Salinas and in general. Also, instructions to spend carefully during July and August. As not much money was available. About 50 pages.
- Budget 1951 - Copies of office memorandum and estimates of requirements for manpower and materials, and a copy of Budget and Finance Memorandum #125. 63 pages.
- Budget F.Y. 1950 - Estimates, revisions and office memos concerning budget; copy of Budget Hearing, F.Y. 1951 and copy of Budget and Finance Memorandum #84, November 22, 1949. 83 pages.
- Budget F.Y. 1949 - Memorandums, estimates and discussion of budget. Also, copy of Budget and Finance Memorandum #22. About 100, 7 pages.
- Budget 1948 - Copies of allotment and supporting statements. 34 pages.
- Library F.Y. 1952 - Notes and memorandums concerning books and periodicals for the library at Salinas Station.
- Cooperation - General. Correspondence from several different individuals, companies and organizations relating to natural rubbers, dating from April 21, 1949 - April 3, 1953. Most were answered by Irvin C. Feustal, Chemist in charge. About 90 pages.
- Letters from many different people on many different subjects relating to natural rubber research during years 1950 - 1953. About 105 pages.
- Cooperation - General. Balance Repair and service. Analytical. Copies of contract and of requests for service, 1948 - 1950. 8 pages.
- Cooperation - General, ultrasonic tests. Some tests were made on guavule using equipment at Carnegie Institute of Washington, but were not very encouraging. 1948 & 1949, 23 pages and one copy of Cenoco News Chats #62, Winter 1948 - 1949.

- Cooperation - Paul A. Allen. Correspondence concerning hiring of a graduate student to work at the Univ. of Wisconsin on a cooperative project on retting. Also, about an article on retting which Dr. Allen had co-authored. 1947 - 1951. 19 pages.
- Cooperation - John Caswell. Correspondence to and from Caswell on testing of deresinated guayule rubber and other aspects of the research program. 1948 - 1950. 61 pages.
- Cooperation - A.S.T.M. American Society for Testing Materials. Correspondence between S. Collier, Irvin C. Feustal, Rolla H. Taylor concerning Taylor's appointment to Chairmanship of a subcommittee, 1949, 33 pages.
- Cooperation: Wright-Patterson AFB. Correspondence concerning visit of Majors Barth and Western and Dr. S. Palinchak to Salinas where they saw all the processes in the making of guayule rubber. Some talk also of using guayule for airplane tires. March 21 - June 3, 1952, 16 pages.
- Cooperation - Wright-Patterson Air Force. Correspondence concerning producing enough guayule rubber to have airplane tires made and precautions to take to make sure the company chosen knows the problems so they won't waste the rubber. Also, translations from Russian Textbooks and Pravda by George S. Tilley of the cultivation of kotsaghvz in the Soviet Union about 1947. May 22, 1951 - November 25, 1952. 23 pages.
- Airplane Tire Tests. Correspondence with the F. C. Schenuit Rubber Co. concerning the production of the airplane tires to test guayule rubber for this purpose. October 6, 1952 - March 13, 1953. 29 pages.
- Cooperation - Army Chemical Center, Maryland. Correspondence with Irving Pockel of the Chemical and Radiological Lab., Army Chemical Center and with other people concerning testing of guayule rubber for use in gas mask face blanks. February and March 1951. 6 pages.
- Cooperation - RAIC Wash. Office. Various reports such as: 1) consumption of water on the basis of rubber produced; 2) stacomising guayule shrub, Mr. Stacom of Armour Research Foundation wants to try his method of obtaining rubber from full grown guayule shrub. 3) information concerning industrial interest in guayule rubber. Includes list of countries to which guayule seed has been sent; 4) Continue evaluation of guayule for tires. Plans for tests with larger quantities of guayule rubber; 5) guayule rubber for exhibition purposes such as, to Delft, Holland, November 15, 1950 - December 1, 1952. About 40 pages.

- Cooperation - Accurate Products Co., Inc., Culver City, CA. Correspondence with a Mr. Wilson and a Mr. Roby of the above company about growing and using guayule for rubber. Also, samples of the rubber made of a mixture of reclaim rubber and guayule rubber. January 12, 1951 - April 27, 1953. 17 pages.
- Cooperation: University of Akron Government Laboratories. Correspondence between C. W. Gay, J. W. Schade and T. R. Larchar of the Univ. Lab. and J. C. Feustal and Dr. Spelz of the PAIC and Salinas concerning tests made on deresinated guayule. 1951. About 10 pages, 2 copies of report by P. G. Labbe on Evaluation of Deresinated Guayule, Project 410-S, on - 970, August 20, 1951. 14 pages. 2 copies of report by J. W. Schade and P. G. Labbe, Stress - strain. Data on compounds of deresinated guayule, Project 333-S-150 on - P - 235, January 16, 1953, 5 pages.
- Cooperation - Air Glo Chemical Co. Correspondence between Mr. Arnold Rand of the above company and Mr. Spelz and Mr. Feustal concerning cost of guayule production. February 27, 1950 - June 4, 1951. 8 pages.
- Cooperation - Armour and Co. Correspondence between L. J. Ingraham and Sanford L. Stielman of above company and Dr. Feustal concerning guayule resins. May 4, 1950 - December 20, 1950. 12 pages.
- Cooperation - Armstrong Tire Co., Gov't. Tire Test Fleet, Camp Bullis, San Antonio, Texas. Progress reports for March 4 and 18 and April 1, 1953. 9 pages. Armstrong Tire Co. compound report #38: Deresinated Guayule Evaluation, May 1, 1951, 8 pages. Also, correspondence between company and Feustal on deresinated rubber being tested, etc. 1951. 15 pages.
- Cooperation - Battelle Memorial Institute. This group offered to do outside work on guayule by-products if the dept. has any money for such help in its budget. October, 1951 - April 10, 1952. 3 pages.
- Cooperation - Battenfeld Grease and Oil Corp. This company wanted a sample of guayule rubber for experimental purposes and a sample was sent them. 1948, 4 pages.
- Firestone Tire and Rubber Co. Correspondence between Frie C. Zimmerman, F. W. Stanely, J. W. Liska, R. C. Davis, O. D. Cole, P. F. Hutchinson, L. N. Cooper, or above company, Dr. J. Reid Shelton, Case Institute of Technology and Rolla H. Taylor, Irvin C. Feustal, K. W. Taylor and Frederick F. Clark of the U. S. Gov't. concerning testing guayule rubber for tires. Includes electron micrographs of

of guayule latex. September 9, 1949 - July 21, 1952. About 52 pages.

- Cooperation - Ford Motor Co. One letter to R. H. Taylor from J. P. Wilson concerning use of quayule rubber as a tackifier for acrylo-nitrile compound. August 29, 1949. 1 page.
- Gates Rubber Co. Correspondence concerning a proposed visit to the above company by Rolla Taylor and Irvin Feustal. Finally just Mr. Taylor went. May 31, 1949 - September 18, 1950, 5 pages.
- General Motors Corp. (Inland Manufacturing Division). Letters about a proposed visit by R. Taylor and I. Feustal to Inland Manufacturing Division, May 23 and June 1, 1949. 2 pages.
- General Tire and Rubber Co. Correspondence concerning a proposed visit to the Akron plant by R. Taylor and I. Feustal. Also, report on some small lots of quayule rubber that the company had been testing. May, 1949 - October, 1953. 13 pages.
- Cooperation - Gidlev Research Institute, Fairhaven, Mass. Correspondence from this company requesting seeds of pinouav (pinque), crystostegia and rabbit bush for a "Rubber Research Program" they are carrying on. January 2, 1951 - January 24, 1951, 5 pages.
- Golden Gate Paint, Varnish and Lacquer Assn. Letters between the above group and Dr. Feustal when he was trying to find by-product uses for the resinous materials obtained in quayule rubber production, August 24 and September 7, 1948, 2 pages.
- Cooperation - Golden West Rubber Co. Letters from F. L. Beiter, factory manager requesting samples of quayule rubber for testing purposes; and from Feustal offering to ship a 5 - 10 lb. lot if that is enough for their purposes. March 19 and 21, 1951, 2 pages.
- B. F. Goodrich Co. Correspondence between J. O. Antonson, Harlan Trumbull, A. E. Jave and A. W. Carpenter of the Goodrich Co. and Drs. Speh, Feustal, Tysdal and R. Taylor concerning the testing results on quayule rubber; and a two year history of quayule that Mr. Trumbull was writing. Also contains 2 reports on deresinated quayule rubber. 1948 - 1953. About 60 pages.
- Goodyear Tire and Rubber Co. Correspondence between J. J. Hoesly, D. D. Patterson, A. M. Clifford, H. J. Osterhof, H. R. Erwin and others whose signatures I can not read of the tire company and Drs. Feustal, Polhamus and R. Taylor concerning testing of quayule rubber. May 1949 - July 1951. About 60 pages.

- Cooperation - Marvel Research Corp. Correspondence concerning resins and possible commercial uses of same. 1951 - 1952. 19 pages.
- Cooperation - Hermann Weber and Co., Inc., New York, N.Y. This company offered its knowledge and facilities (largest deresination plant in the country) to the government if quayule rubber seemed to be commercial feasible. 1951. 23 pages. One sample of deresinated rubber.
- Cooperation - Hewitt-Robins, Inc., Buffalo, N.Y. Correspondence and a report from the above company on the sample of quayule rubber sent to them from Salinas. 1951 - 1952. 20 pages.
- Cooperation - Industrial Tape Corp. One postcard from Dr. F. W. Engel acknowledging receipt of a sample of quayule resin. November 15, 1948. 1 page.
- Cooperation - Intercontinental Rubber Co. Correspondence (including telegrams) concerning testing of samples (Torrean rubber deresinated by Salinas lab) by the Firestone Co., April 1950 - October, 1952, 86 pages.
- Cooperation - Joseph F. Seagram and Sons (Mr. Wilfredo Rafols). Letter from Mr. Rafols requesting 5 pounds of kok-sacnez roots for work on inulin for fermentation; and reply from H. M. Tysdal that he was sending it. December 2, 12, and 14, 1950, 2 pages.
- Cooperation - Johnson & Johnson. Letters about this company's comparison of quayule and natural rubber in adhesive tape - natural rubber is better. March, 1951 - January, 1952. 5 pages.
- Cooperation - Joseph Wagner Manufacturing Co. Letters discussing Dr. Feustel's visit to the above company to use their Rietz Disintegrator on quayule shrub to see whether it would free the latex. February - March, 1948, 7 pages.
- Cooperation - Mellin Institute of Industrial Research. Working entirely with synthetic rubbers so weren't very interested in quayule rubber at this time. April, 1949 - February, 1952, 13 pages.
- Cooperation - Natural Rubber Bureau. Letters from this group thanking the Salinas people for a nice visit to their laboratory

and advising them that they will send them Natural Rubber News monthly. April, 1950 and April, 1951, 2 pages.

- Cooperation - Podbielniak, Inc. Letters discussing a visit of Dr. Banigan, Jr. to this company's labs. to try out the centrifugal solvent extractor on extracting resins from quayule rubber. March - May, 1950. 6 pages.
- Cooperation - Precision Rubber Products Corp. Letters requesting samples of quayule for experimentation (to mix with nitrile rubber for o-rings), November, 1950 - October, 1951, 21 pages.
- Cooperation - Scott Testers, Inc. Letters and descriptions of standard tensile testers and how they can be applied to use on quayule rubber. October, 1948 - September, 1949, 20 pages.
- Cooperation - Stacom Industries, Inc., Long Island City, N.Y. Letters concerning Stacomizing quayule shrub (disintegrating the shrub to obtain the cellulosic constituents). January, 1951 - September, 1952, 9 pages.
- Cooperation - Sharnles Chemicals, Inc. This company had a new defoliant FC3740 that was to be tried on quayule until the activities of the Rubber Investigation group was curtailed. Letters from both groups. May - September, 1949, 12 pages.
- Cooperation - Sun Rubber Co., Barberton, Ohio. Letters asking for a sample of quayule rubber and information on same; and telling of shipping the sample. No results to date. September, 1951 - February, 1952, 9 pages.
- Cooperation - The Surety Rubber Co., Carrollton, Ohio. Correspondence. This company was trying quayule rubber for electricians gloves. They couldn't get a good strong film when dipped from a solvent solution. October, 1951 - April, 1953, 9 pages.
- Cooperation - United States Rubber Co., correspondence. This company wished to obtain 6,000 pounds of quayule rubber for testing. The lab. at Salinas was unable to supply this amount, but did agree to furnish 1,000 pounds. October, 1947 - September, 1952, 20 pages.
- Voit Rubber Co. Correspondence regarding tests made on quayule rubber as a replacement for Hevea rubber in the manufacture of

basketball fabric compound. They found that resinous rubber would serve this purpose as well as deresinated. August, 1950 - January, 1951, 13 pages.

- Cooperation - Private Industry World Bestos Brake Lining Corp. Correspondence between Wm. Nanfeldt of above company and Rolla Taylor of Rubber Research relative to using guavule rubber in brake linings. February - June, 1949, 10 pages.
- Cooperation: Evaluation of Guavule. Various Rubber Co., Mohawk Rubber Co., Tyre Rubber Co., United States Rubber Co., Seiberling Latex Products Co., Eagle Rubber Co., Inc., R. F. Goodrich Co., The General Tire and Rubber Co., Ravbestos-Manhattan, Inc., Goodyear Tire and Rubber Co., Seiberling Rubber Co., New York Rubber Corp., The Okonite Co., Hood Rubber Co., Firestone Tire and Rubber Co., also list of Intercontinental Rubber Co. customers during years 1950 and 1951. 1952, about 70 pages.
- Cooperation - California Institute of Technology. Correspondence regarding the loan of a clafelin refiner to Salinas. January, 1948 - December, 1951. About 20 pages.
- Cooperation - Bureau of Plant Industry - Shrub acreage and production. Letters, memorandum, work sheets, etc pertaining to growing guavule shrub. February, 1948 - May, 1951, around 100 pages.
- Cooperation - Bureau of Plant Industry - Cooperative agreements. Copies of agreements between the Rubber Research Division and the Bureau of Plant Industry. October, 1947 - September, 1952, 25 pages.
- Cooperation - Bureau of Plant Industry Research. Correspondence pertaining to shipment of guavule plants from Texas to Calif. Annual report of Rubber Research Station, Salinas, April, 1951. Progress Report #9, Crop Production Research, June - November, 1951. Other reports covering period October, 1947 - September, 1951, 60 pages.
- Cooperation - RPIS & AF reports on seed stockpiling program. 1951 - 1480 lbs. of 59.3 seed; 50 lbs. of 65-x seed. 1952 - 13,000 lbs. stored. About 40 pages.
- Cooperation - Bureau of Plant Industry - Review of Manuscripts. Some notes on paper entitled "Guavule has become a potential commercial crop for Southwest Texas," and on Domestic Supplies of Natural Rubber. No copies of papers here. 3 pages.

- Cooperation - BPIS & AF - Project Reorganization. As to titles and payscale. November, 1949, 6 pages.
- Cooperation - Bureau of Plant Industry - Equipment and Supplies. Mainly records of transfer of property, loans of property, temporary service transfers. 1947 - 1953, 71 pages.
- Cooperation - Bureau of Plant Industry - General. Correspondence arranging visits, discussing policy and budgets and personnel. 1947 - 1952. 52 pages.
- Cooperation - P.M.A. (Paul Roberts). Letter of suggestions from Mr. Roberts regarding Pebble Mill and Jordan Mill. January, 1951, 7 pages.
- Cooperation - FPL. Letters, office memoranda, requests for reprints from FPL. They seemed to be particularly interested in molecular weight determination of guavule rubber samples. 1947 - 1952, about 50 pages.
- Cooperation - NRRL (Northern Regional Research Lab). Correspondence concerning inulin fermentation, phytic acid for use as a metal inactivator, guavule shrub samples and proposed visits. 1947 - 1952, 6 pages.
- Cooperation - SRPL. Correspondence concerning determination of peroxide in terpenes, blends of guavule with CP-S rubber, tung oil source, and plans for various visits. 1948 - 1952, 17 pages.
- Cooperation - Dr. David Spence. Correspondence concerning sterile Hevea latex that Spence had offered to the Salinas lab. for experiments. 1947 - 1949, 12 pages.
- Cooperation - Texas Agricultural Experiment Station. Letters from Dr. S. E. Jones of Texas Agricultural Experiment Station and Dr. J. C. Feustel of Rubber Research Project concerning the testing of guayule leaves as a stock feed (cattle would not eat them). May - August, 1949, 8 pages.
- Cooperation - Texas Research Foundation. Letters between J. F. Hewson of the Texas Research Foundation and Dr. J. C. Feustal of the Salinas Station concerning visits to Salinas and sample of guavule which

were sent to the state fair and which didn't arrive in time.
May, 1948 - December, 1948, 12 pages.

- Cooperation - Western Regional Laboratory. Letters and notes on the work done at Salinas between October 15, 1947 - January 2, 1953 as reflected in notes to people at WRRL. About 70 pages.
- Cooperation - WPPL - Forms, notebooks and related supplies. Requests for different supplies needed for running the Salinas Lab. About 35 pages.
- Cooperation - WPPL. Spanish Moss collection. The lichen Ramalina reticulata contains a crystalline antibiotic these letters detailed plans for having the army collect the moss in the vicinity of Fort Ord. and for grinding same at Salinas. 1 notebook. 1 of collection records, etc. November, 1947 - May, 1948, 12 pages.
- Cooperation - WPPL. Requests for photostats, ozalids, and mimeographing. Requests and work orders. December, 1947 - April, 1953, about 100 pages.
- Low temperature testing (Arctic Rubber). Schade, J. W. and R. C. Labbe, Technical Report on Special Tests of Guayule, October 10, 1949, 11 pages. Remainder of material in folder consists of letters, memoranda, work sheets, analysis sheets, etc. having to do with the testing of guayule rubber under low temperature conditions. January, 1949 - March, 1952, about 64 pages.
- Cooperation - Navy. Letters discussing visits, loan of equipment and exchange of information on the deresination of guayule rubber and also, the use of the resin in paint. May, 1948 - March, 1953, about 32 pages.
- Cooperation - Office of Rubber Reserve and Rubber Manufacturers Evaluation of Deresinated Guayule for Truck Tires. Letters setting up the tests and progress reports from the government tire test fleet at Camp Bullis, San Antonio, Texas. November, 1950 - January, 1952, about 75 pages.
- Final Report: Government Tire Test Project "C". Deresinated guayule rubber vs. natural (Hevea) rubber (100% and 50%) in carcasses of 9.00 - 20, 10 plv rating, rayon cord, highway tires; GR-S-100 in treads. September, 1952, 26 pages. 5 photos.

- Final Report - Government Tire Test Project "PZ". Deresinated quayule rubber vs. natural (Hevea) rubber (100% and 45%) in carcasses of 9.00 - 20, 10 ply rayon cord tires; GRMS-100 in treads. May 14, 1952, 26 pages, 5 photos.
- Final Report - Government Tire Test Project "194". Deresinated quayule rubber vs. natural (Hevea) rubber (100% and 50%) in carcasses of 7.00 - 15, 4 ply rayon cord tires; X-624 in treads. September 2, 1952, 21 pages, 5 photos.
- Cooperation - Office of Rubber Reserve. Correspondence concerning visits to Salinas, University of Akron, etc. and where to find equipment needed and other procedures. October, 1947 - October, 1951, about 36 pages.

- Administrative and Research Correspondence, Salinas, CA.
- Correspondence with National Bureau of Standards (about 70 pages).
- Roth, Franklin. National Bureau of Standards Report, 1932. Technical Report to Reconstruction Finance Corporation, Synthetic Rubber Division. Vulcanization Characteristics of Guayule Rubber, 7 pages, September 19, 1952 (3 copies). U.S. Dept. of Commerce.
- Airplane Tire Tests, Government Tire Test Fleet, Camp Bullis, San Antonio, Texas. (about 20 pages). Goodyear Tire Tests, 10 pages.
- Foreign Interests - Correspondence - Argentina, Germany, Egypt, Palestine, Australia, Mexico, France, Turkey, Spain, Brit. Malaya. About 200 pages.
- Information - Special Reports and Exhibits. 30 pages. Exhibit Pictures from the Four Regional Research Laboratories. U.S.D.A. Misc. Publ. No. 617:1 - 54, illus., 1946.
- News Releases concerning Guayule. 1948 - 1952. About 40 pages.
- File Set of 24 pictures of Salinas Station.
- Extra copies of figures and photos used in Yearbook Article.
- Information - Photographs. About 30 photos of various equipment, shrub deresination, etc. 1947 - 1952.
- Information - Radio Programs. 1950. 11 pages.
- Information - Speeches, 1949 - 1950.
- Meetings and Conferences, etc. 1. Meetings - 22 pages. 2. Visit of Subcommittee on Appropriations - 25 pages. 3. Field Station Heads, New Orleans, 1949 - 35 pages. 4. Betaine - information - 27 pages.

- List of Patents - about 200 pages; some photostats of the patents.
Various cases of patents - about 300 pages.
- Patent Manual - E.S.D.A. - 1944. Patents and Patent Procedures, 7 pages.
- Patents on Extraction of Guayule - List of patents and actual copies of patents, about 600 pages.
- Personnel - General Correspondence, 1947 - 1953, about 50 pages.
- Property - Surveys, Electrical Circuits, Building and Site, Salinas, CA, about 500 pages.
- Inventory: 1. Property, 1947 about 300 pages; 2. Property, 1948, about 60 pages; 3. Property, 1948, about 75 pages; 4. Property, 1949, about 60 pages; 5. Property, 1950, about 60 pages;
- Surplus Property, 1949, about 80 pages; Surplus Property, 1951, about 40 pages; Surplus Property, other agencies, about 75 pages; Surplus Property, 1950, about 60 pages; Surplus Property transferred from EAIC, about 250 pages.

- Equipment. Design and Specifications: Solvent Extractors. Correspondence concerning equipment needed for the lab. and pilot plant at Salinas. Most companies contacted apparently sent catalogs, some of which are in this folder. Also in folder are copies of Pominski, Joseph, L. J. Molciesen, A. J. Croetto, R. D. Westbrook, E. L. D'Aquin, and W. F. Guilbeau. Solvent Extraction of Cotton-seed and Peanut Oils, Oil Mill Gazetteer, June 1947. Lerman, Frank, Angus B. Kennedy, and Jerome Loshin, Counter - Current Liquid - Solid Extraction, Industrial and Engineering Chemistry, 40: 1753, September, 1948.
U. S. Manufacturers and Suppliers of Equipment for Processing Cotton-seed and Peanuts into oils, meal, and by-products. A 1C - 98, Revised 12/15/47, BAIC USDA.
- Equipment - Bakersfield and Spence. Correspondence concerning the transfer, sale, purchase, etc. of the equipment. August 24, 1948. February 10, 1950. About 35 pages.
- Equipment - Tanks for solvent. Correspondence dealing with acquisition of tanks for solvent storage. Five companies sent brochures. 1951 - 1952. 31 pages.
- Equipment - Operating Instructions. For variable transformers, microvane pumps, Gardner-Denver Compressor, pyrometric controllers no. 1 $\frac{1}{2}$. Knight Miller drill, etc. 1949, 20 pages.
- Equipment - Design and Specifications Attritor. Made by Union Process Co., Akron, Ohio. 2 sheets.
- Equipment - Design and Specifications Centrifuges. Correspondence concerning and catalogs of centrifuges - about 150 pages. 1948 - 1953.
- Five papers on oil extraction: McKinney, R. S., W. Gordon Rose and Angus B. Kennedy, Continuous Process for Solvent Extraction of Tung oil, Industrial and Engineering Chemistry, 36(2): 138 - 144, February, 1944.
Filtration - Extraction: A New Process for Recovering Oil from Oilseeds, USDA, C.A. #22, March 13, 1952.
Selected Publications of the Southern Regional Research Dept. on Oilseed Processing, 2 pages.
Spadoro, J.J., A.V. Graci, H.K. Gardner, J.S. Parker, E.J. Laborde and E.A. Gastrac, Pre-pilot Plant Investigation of a Solvent-extraction Method for Cottonseed Based on Reduced Pressure Filtration.

V Reprinted from Oil Mill Gazetteer, 56(1): 77 - 81, 1951.
Gaslrock, Edward A. Recent Technological Advances in Cottonseed
Processing. Reprinted from Oil Mill Gazetteer, 56(1): 35 - 37,
1951.

- Equipment: Design and Specifications, Refiners. Correspondence, blueprints, catalogs, etc. concerning refiners. 1948 - 1952. About 100 pages.
- Equipment: Design and Specifications, Spectrophotometers. Correspondence and catalogs about Spectrophotometer. 1948 - 1952, About 40 pages.
- Equipment: Spence Mill - Prints and Data, Scales, Parts. Maybe 200 pages.
- Research Program - Suggestions. Various people made suggestions of ways to do things in guayule research. 1947 - 1949, 16 pages.
- Milling - Shakedown. Deals with problems encountered in running the tube mill. 1951, 15 pages.
- Bureau Plant Industry. Records of division of costs between BAIIC and BPI. 1949 - 1952, about 100 pages.
- Research Program - Unit Plans Pilot Plant Section. Gives general research procedure, tentative plans for Pilot Plant Section, summary of work already done and progress reports. 1947 - 1952, 55 pages.
- Research Program - Unit Plans Analytical and Physical testing section. Reports of work done by the above section, 1947 - 1951, 73 pages.
- Research Program - Unit Plans Laboratory Extraction Section. Records and discussion of same for period 1947 - 1951, 44 pages.
- Research Program - Unit Plans Latex Sections. Preliminary study of molecular weight of latex rubbers, tentative plans for latex section and report on research unit #1, 1947 - 1949, 25 pages.
- Projects - Research Line Projects, Discontinued Projects. Line

projects discontinued: G-2-1-7, G-2-1-3; All correspondence and forms seem to relate to these two projects. March 13, 1950 - July 7, 1950. 42 pages.

- Research Line Projects - Revised August, 1952. Samples of line project discontinuances and a letter from George W. Irving, Jr. trying to clarify previous directions for writing them. August 15 and 29, 1952. 17 pages.
- Research Program - Pilot Plant Section. Procedure for control millings. Taylor, K. W. Detailed Procedure for Control Millings, May 19, 1949, 4 pages.
- Projects - Work Project. Gives the principal line of work to be followed. 1944 - 1946, 51 pages.
- Research Program - General Program. Plan of work January, 1948 - August, 1950. Also, a resume of research done by the Emergency Rubber Project, about 26 pages.
- Research Program Bureau Defence Program - September, 1950. Effort to get BAIC declared a defence program so their funds would not be cut. 24 pages.
- Research Program - Emergency Plans. What could be done in the event of an immediate emergency is discussed in these papers. November, 1950, 7 pages.
- Line Projects. Discontinuances, transfer, status of and correspondence and memoranda concerning various guayule line projects. 1952 - 1953, about 65 pages.
- Projects - Research Line Project. Copies of line projects and financial statements. 1944 - 1953. About 60 pages.
- Budget Justification - Fiscal Year 1950. Supplementary statement on progress and current program, 6 pages. 3 pages of photos of B.P.I.S.B.A.E. and B.A.I.C., guayule plant and field, and outline of processing research.
- Reports - Emergency Rubber Project. Correspondence requesting copies

of final report covering operations of the guayule rubber extraction research unit and asking for information in flotation processes for recovering rubber from plant materials, November - December, 1947, 9 pages.

- Reports - Unit - Latex Section. Description of work being done in the latex section, also samples of latex film sheeted, graphs of experiment done and tables showing results, January, 1948 - August, 1939, about 100 pages.
- Reports - Unit - Pilot Plant Section. two copies of Report on Unit of Research #3: An Experiment to Compare Foliate Storage (following field curing) and Defoliate Storage (bale retting) with the Standard Control Milling (milling of lush shrub), written by K. W. Taylor, November 18, 1949, 17 pages, 6 tables, 9 graphs; and Results of Physical Tests on the rubber from this experiment, 9 pages and 7 graphs. 1 copy of rough draft of above. Also, report of unit of research #1 and other reports, 40 pages.
- Reports - Unit - Laboratory Extraction (on units of research). Reports on units 3, 5, 6, 7, 8, 9 and the progress report for April, 1950 Triannual report. 1948 - 1950, 43 pages and several graphs.
- Reports - Laboratory Extraction (Misc. Progress Reports). Various reports from the years 1948 - 1949 - Many having to do with deresination of guayule rubber. 75 pages.
- Reports - Analytical and Physical Testing (Misc. Progress Reports). Reports of work on Bromination, Deresination, Rubber balance, and on polyethylene lined bags for packaging guayule rubber, 1948 - 1950, 40 pages.
- Reports - Latex Section (Misc. Progress Reports). Various reports on Bromination aging of film rubber and several progress reports. 1948 - 1949, about 28 pages, includes samples of latex film sheeted.
- Report - Pilot Plant Section - Progress. Mostly reports by K. W. Taylor on the pilot plant and work done in milling shrub. 1948 - 1951, 24 pages.
- Procedures for the analysis of Rubber Bearing Plants and Related Materials. B.A.I.C., U.S. Natural Rubber Research Station, Salinas,

CA, 1949, 28 pages.

- Reports - Unit - Analytical and Physical Testing. Reports #1 - 31 of the analytical and physical testing section, 1947 - 1951, 122 pages.
- Reports 1 - 6 of the chemical research section. September 1, 1951 - November 29, 1951, 51 pages.
- Reports - General. Ullmann, Max, Valuable Rubber Plants of the Temperate Zone, based on Soviet Research, 1951, Akademie Verlag Berlin. Excerpts translated, 42 pages.
Odorless Rubber - Industry's answer to a 'Buyer's Market', Sindar Reporter, #1, 1949, 4 pages.
Holt, Everett G., Rubber Industry Report, U.S. Dept. of Commerce office of Domestic Commerce, May, 1949, 16 pages.
Rubber, First annual Report by the Secretary of Commerce, April 1, 1948 - March 31, 1949, 38 pages. Also two notes from G. N. Jilbert and I. C. Feustel on the writing of reports.
- Jack Anderson Reports. Copies of regular reports and also, copies of the summaries of these reports sent to Congressman Jack Anderson for period 1948 or 1952, about 200 pages.
- Reports - Final. Dir. Copley and Speh discuss the form that the final report of the work at Salinas should take. It was decided to make two reports: A comprehensive report, and a more condensed, "popular" one for the general public. March 3 and 9, 1952, 2 pages.
- Reports - Special - Sub-committee on Appropriations. Material prepared for use at the appropriations hearings 1949 - 1950. About 200 pages.
- Reports - Special. Contains various reports on the research programs, on conferences in Washington, on B.A.I.C., etc. 1948 - 1949, about 100 pages.
- Reports - Special - Strategic and Critical Materials. One letter criticizing the whole rubber research program, another letter on subject: Transmittal of Stems Relating to Strategic and Critical Materials and one paper on the rubber research activities of the Dept. of Agric., 1949 - 1952, 19 pages.

- M - Exploratory - Mill Temperatures. One request sheet for analysis dated 6/30/49.
- Drying Rubber with Acetone. Pencil written paper, one sheet, no date, initials W. P. E. at bottom.
- Detailed Procedure - Standard Milling. Detailed Procedure for control milling. May 19, 1949, 4 pages. One request sheet for analysis, date of sample 2/3/52, date of reported 3/7/52.
- Milling Balance (RHC) vs. Laboratory Analysis. Exp. #102P and 106P checks the shrub or various parts of it (bagasse) (effluent) for various constituents (resins, RHC, moisture). These are lab. work sheets and typed resume of work done. 31 pages. July 14, 1949 - September 28, 1949.
- Increase in Total Accountability with Increase in Yield. Graphs and lab. work sheets. 4 pages. No dates given.
- M1-1 - Control Milling. Request sheet for analysis, November, 1948, 89 sheets. Request and report sheet for Standard Physical Tests. November, 1948. 17 sheets.
- M2-1,2&3- Shrub Sampling. Request sheet for analysis, January, March, 1949. 32 sheets.
- M1-4 - Control Milling. Request sheet for analysis, December, 1948, 64 sheets. Request and report sheet for Standard Physical Tests, December, 1948. 8 sheets.
- M1-5 - Control Milling. Request sheet for analysis, December, February, 1949, 56 sheets. Request and report sheet for Standard Physical Tests. February, 1949. 8 sheets.
- M1-6 - Change in Dry Weight Shrub. Request sheet for analysis. February, 1949. 9 sheets.
- M1-7 - Control Milling. Request sheet for analysis, March, 1949, 64 sheets. Lab work sheets - 3 pages. Detailed procedure for control milling. Rough draft. April 1, 1949, 4 pages.

- RC1-1 - Request sheet for analysis April, 1949, 80 sheets. Lab. Work sheets - 6 sheets.
- RC2-1 - Exploratory Experiment to Determine Possibilities of Increasing Yields from Lush Shrub by Increased Comminution in Crushers and Hammermill. November, 1949. Laboratory work sheets and comments.
- RC-3 - Request sheet for analysis, February, 1951 and February, 1952. 10 sheets plus 2 work sheets.
- RW2-1 - "Slow Milling." Nothing in folder.
- Exploratory - Jordan. Request sheet for analysis October, 1948. 10 sheets. Request and report sheet for Standard Physical Tests. October, 1948, 4 sheets.
- Exploratory - Milling Time. Request sheet for analysis August, 1948, 3¹/₂ sheets. Memorandum about repeating a certain analysis.
- Sl,? - Separation. Request sheet for analysis October, November, 1951, 2 sheets.
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- Var. and Hybrid Test for P.P.I. Laboratory work sheets November 7, 1950, 2 sheets.
- Exploratory - Milling of Plant Fractions. Request sheet for analysis January, 1949. 25 sheets. Request and report sheet for Standard Physical Tests. January, 1949. 3 sheets. Puckett, R. F., Molecular Weights of Unfractionated Guayule Rubber Samples, January 20, 1949. 1 page.
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- Quality - Torreon Rubber vs. Salinas, Tube Milled. Three work sheets and one request sheet for analysis. February, 1951.
- Take-up of Resin by crude from slurry with resin added. 2 graphs and 2 work sheets.

- Tests on New Testing Machines and Dies. 10 laboratory work sheets, 7/13/49.
- Resin: Rubber in crude vs. resin in shrub. Graphs (5 sheets), work sheets (4 pages). Also, A survey of the Relationship between Resin: Rubber ratio in shrub and Resin: Rubber ratio in the crude rubber. March 17, 1950.
- Constant Loss in Milling, costs of Production, Yields at Various RHC contents. Graphs and laboratory work sheets, 7 pages. 1944 - 1945.
- Byproducts. One sheet on products from milling of guayule. No date.
- Miscellaneous. Pictures, plans, diagrams, etc. of various pieces of equipment (such as: settling tank, free swinging pendulums, absorption tube, rotating sample divider) used in milling guayule rubber. 1943 - 1949. Also, a diagrammatic flow chart showing the steps for processing guayule for rubber. E.C.T. 1950.
- Graphs and charts. Deals with resins, water solubles, Mooney viscosity lush shrub, dried shrub, etc. 1949.
- Mills. Instructions for operating W30 Model Charlotte Collaid Mill. 2 pages. Plans for Jordan Platform and Tanks. E.C.T. 10/18/49. 1 page.
- Rough Sketches. Tube Mills and Jones Mill. 25 pages. No dates.
- Pumps. Diagram and blueprints, 1934 - 1944. 10 pages.
- Guayule/P. stramonium. 14 prints of photo: comparison of the first generation hybrid between guayule and Parthenium stramonium (on the left) and pure guayule. 2 prints of photo: comparison of the growth of 5 yr. old guayule (Parthenium argentatum) (on left) with that of a related plant of the same age (Parthenium stramonium) on the right.
- Data - not specifically identified. 5 big sheets of graph paper.
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- Reports, Progress (Cont). Report #1 - Shrub milling - Acetone. Report #2 - Determination of acetone in water. Report #3 - Fractionation of guayule resin. Report #4 - Guayule rubber solubility. Report #5 - Guayule Rubber purification. Report #6 - Fractionation of guayule. September, 1948. Reports from Marie V. Conti.
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- Guayule Rubber, General. Dietz, T. J. and J. E. Hansen, The Molecular Weight of Guayule Rubber. No definite date - perhaps 1949, 5 pages. Rubber From Guayule, U.S.D.A. Forest Service, Emergency Rubber Project. May 11, 1945.
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E.O. - (Folder #5) BAIC Reports. 1947 Work Project # g-2-1 Triannual report, December 1, 1950 - March 31, 1951. Deals with comparative testing and evaluation, milling development, deresination, aging studies and comparison of Mexican and Salinas guayule. 4 pages. Work project # G-2-1 annual report, April 1, 1950 - March 31, 1951. Summary and details of various projects during the above period. 7 pages.

E.O. - (Folder #4) BAIC Monthly Reports, 3/1/45 - 3/31/46. Summary Progress report of Guayule Rubber Extraction Research Unit. 12 reports for year 1945 - 46. About 125 pages. Work project triannual report, 2 reports covering period April 1, 1945 - November 30, 1945, about 40 pages. Guayule Process Research and Development (an appraisal of the work of the unit) 2 copies, 29 pages. October 29, 1945.

E.O. - (Folder #3) BAIC Monthly Reports, 8/1/44 - 2/28/45. Summary Progress Report of Guayule Rubber Extraction Research Unit. 7 reports (June, July, August, September, November, December, February), about 120 pages. Work Project Reports: 8/1/44 - 10/31/44 and 11/1/44 - 1/31/45, about 30 pages. Work Project annual Report 1/1/44 - 3/31/45, 10 pages. Summary and details of various projects during the above periods.

E.O. - (Folder #2) BAIC Monthly Reports, 2/1/44 - 5/31/44. Guayule Rubber Extraction Research Unit. 4 monthly reports for period shown above. Reports on all facets of the development of new and improved methods for the production of guayule rubber. About 200 pages.

E.O. - (Folder #1) BAIC Monthly Reports, 5/14/43 - 1/31/44. Guayule Rubber Extraction Research Unit. 5 monthly reports, 1 laboratory report (October 1, 1943 - October 31, 1943) and one report of Recommendations for design of Guayule Rubber Factories, based upon Development Progress to December 31, 1943. About 150 pages.

- E.O. - ERRL Summary Reports. Final summary report on the emergency rubber project (at the Eastern Rubber Research Laboratory), June 30, 1944. Gives information on Rabbitbrush, Pinque, Guayule, Cryptostegia, and Kok-saghyz with the most on the last two. 37 pages.
- E.O. - (Folder #3) ERRL Monthly Reports 1/1/44 - 4/30/44. Progress reports; recovery of natural rubber from cryptostegia and kok-saghyz (Russian dandelion). About 50 pages.
- E.O. - (Folder #1) ERRL Monthly Reports 5/1/42 - 6/30/43. Recovery of natural rubber from domestic plants: 11 monthly reports on progress in developing processes for obtaining rubber from the various plants being tested. About 125 pages.
- E.O. - (Folder #4) Rand, W. E., Project Manager, et al. Natural Rubber Research Project, Final Report, July 31, 1947, Stanford Research Institute, Natural Rubber Research Project.
- E.O. - (Folder #4) Feustel, I. C. Material for annual report of the chief of Bureau - 1951. Continued Progress on Guayule as a domestic source of natural rubber. 5 pages.
- E.O. - (Folder #4) Work project triannual report for project # g-2-1, April 1, 1949 - July 31, 1949. 5 pages. Report of attendance at the meeting of the Am. Chem. Soc., Chicago, Ill. April 21 - 23, 1948 and trip to federal, state and industrial laboratories. 10 pages.
- E.O. - (Folder #3) 1/1/45 - 2/46. Monthly Progress Reports, December 1944 - December, 1945. NR Supervision, Informational Report, E.). About 25 pages. Memorandums and reports on the Spence Mill. About 50 pages. Also, 2 reports on Bakersfield Mill, about 12 pages. Minutes of meeting at the Dept. of Agric., Los Angeles, June 15 and 16, 1945 in reference to construction and plant operation, emergency rubber program (guayule). 14 pages. Harvesting and processing guayule shrub, 2 copies of report 11/6/45. 11 pages each.
- E.O. - (Folder #3). Eskew, Roderick K. Natural Rubber from Russian Dandelion. India Rubber World : 517 - 520, July, 1946.
- E.O. - (Folder#3). 1/1/46 - 2/46. Miller, G. W. (compiled by) Abstracts of Patents Pertaining to the Recovery and Refining of Rubber from Guayule. February, 1946. Patents granted between 1900 and 1945.

- E.O. - (Folder #2). A Glossary of Technical Terms for the Guayule Wanglers. Emergency Rubber Project, Los Angeles, Calif. April 10, 1944. 22 pages.
- E.O. - (Folder #2). Miller, George W., A History of Improvements which were Influential in Increasing the Commercial Recovery of Guayule. NR Extraction Milling Improvement Rubber Recovery, E.O. November 1, 1944. 16 pages.
- E.O. - (Folder #2). Account of Test Runs at Spence Factory, 8/4/44. 37 ~~pages~~.
- E.O. - (Folder #2). Hall, J. A., Principal Biochemist, Process Design for the Bakersfield Plant and B.A.I.C. Program NR Cooperation - D B.A.I.C., NR Improvement - E, Mills Design, E.O. July 10, 1944. 8 pages.
- E.O. - (Folder #2). Preliminary Tests of B & J Cutter and Bagasse Burning Equipment, NR Extraction, Equipment and Material, Ball & Jewell Cutter, E.O., June 17, 1944. 5 pages.
- E.O. - (Folder #2). Report on trip to Mexico to observe guayule mills, June 19 - July 12, 1944. 6 pages. Also, diagrams (flow sheets) of the following Mexican mills: Torreon Mill, Hulers de Parras, S.A., Sachule, 6 pages.
- E.O. - (Folder #2). Cooney, D. C. Flow sheet of the Salinas Factory, Campaign of 1941. NR Extraction Milling Specifications, E.O., 1943. 5 pages.
- E.O. - (Folder #2). Recommendations for the design of guayule factories, based on the work at the Salinas, Calif. Plant through February 29, 1944. 27 pages. 1 flowsheet diagram.
- E.O. - (Folder #2). 1/1/44 - 12/31/44. Monthly Progress Reports, December, 1943 - October, 1944, NR Supervision Informational Report. About 106 pages. Schematic plan of present and proposed Salinas, April, 1944. 1 page. Plans for the Bakersfield Mill, NR Improvements - E Bakersfield Mill, E.O., December 13, 1944. 9 pages. Theories regarding Guayule Extraction by the "Pre-coagulation" method. NR Supervision - E General E.O. April 24, 1944. 10 pages.
- E.O. - (Folder #2). Guayule Facts and Figures. NR Plans Objectives - guayule E.O. Engineering and Milling Section. January, 1944.
- E.O. - (Folder #1). Lawrence, William Appleton, Early Developments in the Milling of Guayule. From India Rubber World, 12/1/13.

- E.O. - (Folder #1). 18 pages of correspondence from the Intercontinental Rubber Co. files.
- E.O. - (Folder #1). Monthly Progress Report for the month of November, 1943, NR Cooperation, General. E.O. 13 pages. Also, 12 pages of correspondence and memorandums.
- E.O. - (Folder #1). Eskew, Roderick K., Report of a Study on the Location and Nature of Pilot Plants to be Established for Developing Methods for Extracting Rubber from Domestic Plants, April 28, 1942. 36 pages, 2 diagrams.
- E.O. - (Folder #1) For the Record. Kelley, Evan W. Pilot Mill and Laboratory Experimentation, NR Extraction, Milling, EAIC E.O., June 19, 1943. 3 pages. (Kelley takes issue with plans for the mill). October 4, 1943, a meeting was held in Paul H. Roberts, Director of the Guayule Emergency Rubber Project, to discuss the functions of the Research Program and plan of work. 8 pages.
- E.O. - (Folder #1). Hastings, Herbert P., Flow Sheet of Salinas Guayule Rubber Extraction Factory (actually a description of the processing methods used by the Intercontinental Rubber Co.). NR Extraction - E, Milling, General, July 10, 1942, 4 pages.
- E.O. - (Folder #1). Notes on Guayule Rubber Processing. Notes on Milling and processing guayule. Both papers are from data in the Salinas files and are a summary of information from experimental work and milling carried out by the Intercontinental Rubber Co. 1943. 62 pages.
- E.O. - (Folder #1). Lee, C. A. Factory Milling, NR Extraction - E, General Mill Practice, E(YU) Manufacturing Processes. E.O. March 6, 1943. 6 pages.
- E.O. - (Folder #1). Hall, J. A. Fundamental and process research required for a new guayule rubber extraction process. NR Extraction, Milling, General, E.O. June 12, 1942. 4 pages. Hall, J. A. Present guayule process and possible improvements, NR Extraction, Milling, General. E.O. June 11, 1942. 6 pages.
- E.O. - (Folder #1). Progress reports for October 3 and 30, 1942 and July 19, September 2 and October 1, 1943 written by C. A. Lee and George W. Miller. Mostly concerning the Pilot Mill and factory. 12 pages.
- E.O. - (Folder #1). Miller, G. W. Comparison of Yields of Irrigated vs. Dry Land Shrub. NR Assays, Series No. , Irrigated vs. Dry Land

Shrub. December 13, 1943. 3 pages.

E.O. - (Folder #1). Recovery of Rubber from Young Guayule Shrub. RITE: EZ 11/12/43. Eastern Region Research Laboratory. 8 pages.

E.O. - (Folder #1). List of U.S. Patents on Guayule Production to 1942, compiled by David Spence, January 11, 1943. 2 pages.

E.O. - Technical Information of Planting, Cultivation, Harvesting, and Processing of the Guayule Shrub. Rubber Laboratory, More Island Navy Yard. 1942. 22 pages, 3 pages of flow diagrams, 6 pages of technical diagrams and 53 photographs of growing and processing guayule.

E.O. - Miller, George W., Milling Specifications for Guayule Rubber. NR Extraction - E, Milling, Specifications, 1943 - 1944. 56 pages. (Specification for 13 of processes involved).

E.O.1. - NR Mill Operation Reports - YU - 182. Spence Mill Weekly Reports. January 21, 1945 - December 17, 1945. About 100 pages.

E.O. - (Folder #2). ERRL Monthly Report. 7/1/43 - 12/31/43. About 150 pages. Eskew, R. K., Project Leader in charge, Recovery of Rubber from Two-year Old Guayule. July 1, 1943. 54 pages.

E.O.1. - NR Mill Operations - Reports - YU - 183. Weekly Mill Efficiency Report and Rubber Quality Tests. March 5, 1945 - December 8, 1945. About 120 pages.

E.O.1.- Coe, A. S. Residual Rubber in Effluent from Bird Centrifuge, June 1, 1945. Miller, G. W. Rubber Loss, Bakersfield Mill. November 26, 1943.

E.O.1.- Olson, D. S. Summary of Assyas of Arguello Shrub in Factory Campaign in 1943. About 20 pages. 3/21/44. Criticism of this report by G. W. Miller, March 24, 1944; rebuttal by D. S. Olson, March 29, 1944. 4 pages.

E.O.1.- Several reports (Factory Series 100) on milling procedure, mill losses, and criticisms, comments and rebuttals of criticism on reports, May 26, 1943 - January 19, 1944. 48 pages.

E.1.0.- BAIC - Salinas, December, 1943 - June, 1944. Pilot plant investigations on the development of new and improved methods for the production of guayule rubber. Details of work and progress of same being carried on in all sections. About 400 pages.

E.1.0.- Taylor, K. W. Milling of Nursery Shrub. October 18, 1948. 3 pages.
E.1.1. Shrub used was 13 months old.

E.1.0.- Miller, G. W. Disposal of trash from Spence Shrub dryer cyclone. August 24, 1945. 1 page.

E.1.0.- Gedney, D. R. Preparation of three-year plants for milling. July 31, 1944. 18 pages. Stockdale, L. C. (Acting Director). Comments on assay Laboratory Report E.1.0. - "Preparation of three-year plants for milling." September 27, 1944. 2 pages.

E.1.0.- Miller, George W. Mill Losses - Rubber Losses occurring in the Processing of Guayule Shrub. Spence Mill, Texas Shrub. January 10, 1944. 10 pages.

E.1.1.- Bullard, W. E. and K. W. Taylor. Comparison of various methods of chopping and drying of shrub samples with respect to percent crude rubber extraction. April 24, 1946. 3 pages.

E.1.1.- Miller, G. W. and K. W. Taylor. Operational experiment on Factory conditioning of guayule shrub for milling in the Salinas area. Part V - Prestorage Treatment of Lush Shrub in Live Steam. February 19, 1946. 3 pages.

E.1.1.- Miller, G. W. and K. W. Taylor. Operational experiment on factory conditioning of guayule shrub for milling in the Salinas area. Part III - Prestorage Treatment of Shrub in Live Steam.

- E.1.1. - A. C. Hildreth's letter to Mr. Roberts concerning boiling of shrub to remove a considerable amount of the resins present. August 8, 1945. 1 page.
- E.1.1. - Proposed re-arrangement of shrub preparation department BAIC, September 5, 1944. 3 pages. Also, costs at present and proposed.
- E.1.1.0. - D. S. Olson. Work Plan - Preparation of three-year-old shrub for milling, November 20, 1943. 3 pages.
- E.1.1. - Milling young shrub without crushing. two-year-old field irrigated plants, Spence Field. Var. 593 lifted and put in cold storage. April 9 - 14, 1942. Report date: July 15, 1943. 1 page.
- E.1.1. - Emerson, Robert. Theoretical considerations as to the Physiological Processes of the Plant and Their Relation to Extraction (in a letter to W. G. McGinnies, U.S. Forest Service), May 4, 1943. 2 pages.
- E.1.1. - Hildreth, A. C. Miller's theory concerning the effect of living cells on milling guayule. May 1, 1943. 3 pages.
- E.1.1. - McGinnies, W. G. "Death of the Cell" Theory as Applied to Milling Guayule. (Theory of Fundamental Physiology), April 29, 1943. 2 pages.
- E.1.1. - Traub, H. P. Miller's Theory on Viability of Plant Cells. April 26, 1943. 1 page of criticism.
- E.1.1. - Baucher, Harry. Effect of artificial drying of shrub on rubber quality. April 12, 1943. 2 pages. Also, letter dated April 2, 1943 from Evan W. Kelley asking Dr. Baucher for this information, 1 page.
- E.1.1. - Hall, J. A. "Death of the Cell" Theory as Applied to Milling Guayule. Suggests using chloroform, toxic gas, etc. to kill cell. April 5, 1943. 2 pages.
- E.1.1. - Olson, D. S. Results of Moisture Milling Tests Performed by Dr. W. G. McCallum in May, 1935. March 8, 1943. 1 page.
- E.1.1. - Miller, G. W. A Theory Proposed to Explain the Technique of Proper Preparation of Guayule Shrub for Pebble Milling. March 8, 1943. 3 pages.

E.1.1. - Olson, D. S. Three series of tests done in December, 1942 and January, 1943 to get data on seasonal trends in extraction. Shrub used was 18, 19, and 20 month old Spence shrub - not irrigated. 16 pages.

E.1.1.1. - Taylor, K. W. Parboiling vs. other methods of defoliation. November 6, 1943. 21 pages, 5 graphs. Summary of methods attempted to date.

E.1.1.1. - Miller, G. W. Operational experiment on factory conditioning of guayule shrub for milling in the Salinas area. Part I - Preliminary study of the effect of drying and/or heating parboiled bales in hot air. October 10, 1946. 5 pages.

E.1.1.1. - Taylor, K. W. Use of Parboil Tank (For the record), March 10, 1946, 1 page. Bales turned over, lost wires and became stuck in discharge mechanisms.

E.1.1.1. - Two pages of data on shrub samples from different nurseries. October 21, 1944. MacDonald, F. Weight of Leaves from Defoliating Trommel. September 26, 1944. 1 page.

E.1.1.1. - Lee, Chas. A. Moisture in Parboiled Leaves. September 16, 1944. 2 pages. MacDonald, F. Storage of shrub for Bakersfield Unit. September 2, 1944, 8 pages, 1 graph.

E.1.1.1. - Taylor, K. W. Defoliation by Use of Caustic Material in the Parboiling Water. June 20, 1944. 2 pages. Miller, G. W. Time Required to Flash-Boil for Defoliation, May 1, 1944. 1 page.

E.1.1.1. - Gedney, D. R. Leaf Weight in Relation to Plant Weight. April 10, 1944. 8 pages, 1 chart. Olson, D. S. Effect of Defoliation on Milling of Young Guayule Shrub. November 23, 1943, 3 pages.

E.1.1.1. - Olson, D. S. Removal of Flower Stems (to get better understanding of the occurrence of flower stems within and outside the periphery of the crown of young plants). November 15, 1943. 1 page.

E.1.1.1. - Olson, D. S. Cyanamid Treatment. (To defoliate growing plants.) Doesn't make all leaves fall. October 29, 1943. 6 pages.

E.1.1.1. - Taylor, K. W. Separation of leaves from other portions of chopped guayule by flotation. October 23, 1943. 1 page.

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E.1.1.1. - Wheeler, Louis C. Air separation of leaves from other portions of chopped guayule. (No satisfactory sorting was secured.) October 7, 1943. 2 pages. Olson, D. S. Defoliation by Air classification. Preliminary Study. October 4, 1943. 2 pages.

E.1.1.1. - Wheeler, Louis C. Defoliation by Burying. Buried for 18 days, leaves rotted and fell off. September 29, 1943. 1 page.

E.1.1.1. - Taylor, R. H. An Experiment to Compare Foliate Storage (following field curing and defoliate storage - bale retting - with standard control milling). (Milling of Lush Shrub.) Report on unit of Research #3. 40 pages, 3 graphs. November 17, 1949.

V
K.1.1.1. - Allen, Paul G. and Ralph Emerson, Guayule Rubber, Microbiological, Improvement by Shrub Retting. Industrial and Engineering Chemistry. 41: 346 - 365. February, 1949.

E.1.1.2. - #2, #1. Taylor, K. W. Milled Ensiled Shrub. 2 copies. October 25, 1948. 10 pages. Color of rubber was very dark.

E.1.1.2. - #1. (6/23/47 - 6/14/48). Benedict, H. M. Further Studies on the Changes in Guayule Shrub During Storage. June 14, 1946. 24 pages. Benedict, H. M. Changes in Rotted Guayule Shrub During the First 10 Days of Storage. June 14, 1946. 14 pages.

E.1.1.2. - Spence Mill Tests of Bale - Retting in Comparison with Other Storage Methods. Revised per MacDonald's Memorandum of April 17, 1946. Experiment conducted from August to October, 1945, at Salinas, CA. Date of paper January 19, 1946. 25 pages.

E.1.1.2. - Taylor, K. W. Final Milling of Quail Creek Shrub Defoliated and Rebaled. October 9, 1945, 2 pages. Taylor, K. W. Comparative Data on Quail Creek Nursery Seedlings at Spence Mill. September 12, 1945. 1 page.

E.1.1.2. - MacDonald, Francis. Baling Equipment. October 5, 1945. 3 pages.

E.1.1.2. - Correspondence from the L. R. Christie Co., concerning the size of the drums needed for the retting plant. August 20, 1945. 2 pages.

E.1.1.2. - Ress, D. F. Evaluation of Retted Guayule. The B. F. Goodrich Co., Akron, Ohio, May 17, 1945.

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E.1.1.2. - Miller, G. W. The Development of a Working Hypothesis Regarding the Phenomena of Coagulation of Rubber in Guayule Shrub. April 10, 1945. 7 pages.

E.1.1.2. - Miller, G. W. To Ret or Not to Ret, August 19, 1944, 5 pages.
Miller, G. W. To Ret or Not to Ret-Part II, October 12, 1944, 2 pages.
Miller, G. W. To Ret or Not to Ret-Part III, February 5, 1945, 2 pages.

E.1.1.2. - Interim Report on Retting to November 1, 1944. 19 pages, 3 graphs.

E.1.1.2. - Allen, P. J., R. Emerson and C. B. Van Niel. Principles and Practice of Guayule Shrub Retting. August, 1944. 15 pages. Appendix to Principles and Practice of Guayule Shrub Retting. Further discussion of rotating drum rets. October, 1944. 2 pages.

E.1.1.2. - MacDonald, F. Retting at Spence Factory. September 24, 1944, 3 pages. Byrne, J. J. Comments on BAIC Report, Principles and Practice of Guayule Shrub Retting. August 24, 1944. Also, an abstract of BAIC Report August 22, 1944. 1 page.

E.1.1.2. - Gedney, D. R. Corn Crib Retting, July 28, 1944. 9 pages. This type of retting as tried in this experiment was unsuccessful (rubber was low in quantity and of inferior quality.)

E.1.1.2. - Kaley, C. B. Retting of Guayule Shrub in a Chinaman Type Bin. July 26, 1944. 10 pages. (Is one good way of retting.)

E.1.1.2. - Gedney, D. R. Other Methods (Box, Floor and Drum) of Retting as a Means of Preparing Shrub for Milling. July 25, 1944. 20 pages.

E.1.1.2. - Gedney, D. R. Pit Storage as a Method of Preparing Two-year Shrub for Milling. July 10, 1944, about 28 pages. Pit storage proved to be unsuccessful because of variations in weather conditions with resulting lack of control over "proper" retting conditions.

E.1.1.2. - Allen, Paul J., J. Naghski and Sam R. Hoover. Decomposition of Guayule Resins by Microorganisms. Journal of Bacteriology, 47(6): 559 - 568. 2 plates.

E.1.1.2. - Miller, G. W. A Few Facts About Retting. May 29, 1944. 2 pages. Same author, Clinical Record (a satire), May 19, 1944. 1 page.

E.1.1.2. - Cumming, James M. Milling of B.P.I. Ensilage. May 19, 1944. 3 pages. Results show that leaves should be removed before ensilage storage.

E.1.1.2. - Miller, G. W. Tensile Strength vs. Quality of Guayule - A New Aspect of Shrub Retting. May 2, 1944. 3 pages. Miller, G. W. and K. W. Taylor. Preparation of Shrub for Retting. April 18, 1944. 6 pages.

E.1.1.2. - Byrne, James J. Flash-Burning of Shrub for Field Defoliation (comments). March 20, 1944. 1 page. Mildrum, E. A. Flash-Burning of Shrub for Field Defoliation. March 15, 1944. 1 page. (Method and hazards.)

E.1.1.2. - Campbell, W. A. Fungi Isolated from Retting Experiments. February 29, 1944. 5 pages. (19 species found, 4 of them infrequently.)

E.1.1.2. - Olson, D. S. Exploratory Tests on Weight Loss in Retted Shrub. February 17, 1944. 3 pages. Eskew, R. K. Retting of Buried Shrub. January 18, 1944. 2 pages. Olson, D. S. Shrub Storage in Pits. December 30, 1943. 3 pages. and December 17, 1943. 4 pages.

E.1.1.2. - Taylor, K. W. Storage of Chopped Shrub. January 8, 1944. 5 pages. Correspondence from Dr. Boucher to Mr. Baker concerning Madero Patent application. July 21, 1941. 3 pages. U.S. Patent office - Spence Method of Retting. Patented July 18, 1933.

E.1.1.2. - Papers from the Intercontinental and continental-Mexican Rubber Co. files on subject of retting and storage. August 25, 1926 - June 21, 1928.

E.1.1.3. - Reports by Miller and Taylor concerning use of the Gruendler Hammer Mill. December 18, 1945 - 20 pages including a sample of bagasse.

E.1.1.3. - Several papers on power needs of the motors at Spence Mill. November 1, 1943. 7 pages.

E.1.1.3. - Several reports, memorandum, and letters concerning baled shrub sent to the Jeffrey Manufacturing Co. April 4, 1945 - July 19, 1945. 21 pages.

E.1.1.3. - Catalogs from Gruendler and Jeffrey (1938) Companies showing shredders that could be used for guayule and letters about such equipment. About 100 pages.

E.1.1.3. - Meldrum, E. A. and C. B. Kaley. The Bibb Disintegrator (as a grinding medium for guayule shrub). March 22, 1945. 22 pages.

E.1.1.3. - How to adjust knives on the F-11 cutter. March 2, 1945. 1 page.
Bullard, W. E. Comparison of Scrubbing Before Paila Treatment with Scrubbing After Paila Treatment, according to Effect on Chemical Composition of the Milled Crude Rubber. February 24, 1945. 7 pages.

E.1.1.3. - Miller, G. W. Preliminary Experiment using Bibb Disintegrator for Grinding Dried Shrub - Series 1500. April 15, 1944. 2 pages.
Olson, D. S. Ball-Jewell Grinding vs. Crushing Young Guayule Shrub Before Milling. April 4, 1944. 14 pages.

E.1.1.3. - March Report: Cutting vs. Crushing. April 7, 1944. 5 pages.
Cumming, J. M. Data obtained from Milling Crushed Shrub. March 16, 1944. 3 pages.

E.1.1.3. - Olson, D. S. The Use of the Ball-Jewell Grinder in Lieu of Crushing Shrub for Milling. November 22, 1943. 6 pages, 2 copies.
Comments and corrections. 2 pages. Olson, D. S. Ball-Jewell Grinding. December 6, 1943, more work with finer sieves, 9 pages.

E.1.1.3. - Miller, G. W. Fine Grinding vs. Crushing. December 7, 1945. 2 pages.
Miller, G. W. Size of Guayule Worms. December 3, 1943. 3 pages.

E.1.1.3. - Wheeler, Louis C. Loss of Moisture in Crushing. October 18, 1943. 2 pages.
Miller, G. W. A Study of the Use of the Ball and Jewell Rotary Cutter for the Fine Grinding of Guayule Shrub to Replace the Crushing Operation. September 23, 1943. 3 pages. 2 tests.

E.1.1.3. - Series No. 400. Factory Run. Effect of Wet vs. Dry Chopping.
April 25 - May 1, 1943. 4 pages.

E.1.1.3. - Miller, G. W. Status Factory Operations (Spence). April 26, 1943. 4 pages.
Miller, G. W. Wet Chopping vs. Dry Chopping. April 12, 1943. 3 pages.

E.1.1.3. - Problem assignment covering wet vs. dry chopping of guayule.
Series #400. April 10, 1943. 3 pages.

E.1.1.3. - Miller, G. W. Effect of Factory Chopping, Washing, and Drying on Rubber Yield. March 2, 1943. 2 pages. Lee, C. A. Preparation of Shrub for Milling. November 11, 1942. 2 pages. Olson, D. S.

Summary of Milling Analysis of Six Tests. December 9, 1942.
2 pages.

E.1.1.3. - Experiments on milling from the Intercontinental Rubber Co. file.
Work by Spence, Yeandle, and others. March 29, 1930 - July 31,
1931. 90 pages.

E.1.1.3. - Boucher, H. Wet and Dry Crushing - A Summary of Work to October,
1937. 8 pages.

E.1.1.3. - Yeandle, William H. Recovery of Rubber (Subjection of Shrub to
High Pressure and Sudden Release). Patent Digest. Patent # 1,695,676.
December 18, 1928. 6 pages.

E.1.1.4. - Campbell, J. F. Tests with Delmhurst Moisture Detector. March 29,
1945. 2 pages. Miller, G. W. Slow Drying vs. Fast Drying as
a Means for Coagulating Rubber in Guayule Shrub. October 31, 1944.
2 pages.

E.1.1.4. - Rotty, Roland. The Effect of Rehydrating Shrub on Milling and Mill
Recovery. August 9, 1944. 7 pages. Olson, D. S. Effects of
Shrub Moisture in Mill Recovery of Guayule Rubber. May 17, 1944.
4 pages, 2 graphs.

E.1.1.4. - Wheeler, Louis C. Remoistening Overdried Guayule. October 14,
1943. 4 pages, 1 drawing, 1 graph. Drying Chopped Guayule Shrub,
Roto-Louvre Dryer Test. May 4, 1943. 3 pages.

E.1.1.4. - Experiments from the Intercontinental Rubber Co. files on conditioning
of shrub and milling same. July 30, 1926 - October 26, 1929. 25 pages.

E.1.1.5. - Harrison, S. R. Acid Coagulated Guayule - Second Sample. October 22,
1945. 3 pages.

E.1.1.5. - Patent #2, 434, 412. Recovering Rubber from Guayule Shrub. Jan-
uary 13, 1948. Edwin P. Jones, Salinas, CA assignor to the U.S.A.
as represented by the Sec. of Agriculture. 3 pages.

E.1.1.5. - Patent U.S. #2,373,689, April 17, 1945 granted to Paul Kenda of
Los Angeles covering a process of producing and utilizing guayule
rubber. 2 pages.

E.1.1.5. - Jones, E. P. and K. W. Taylor. Report of Factory Scale Coagulant

Test at Spence Mill. July 10, 1945. 7 pages. Also, Rebuttal to Miller's comments of July 16 and Supplement to Report of July 10. 2 pages.

E.1.1.5. - Taylor, K. W. and E. P. Jones. Report of Spence Factory Milling of Conditioned Shrub by the Conventional and Coagulant Processes. October 2, 1945. 7 pages.

E.1.1.5. - Correspondence with Firestone Rubber Co. concerning acid coagulation of guayule rubber. August 1, 1945. 7 pages.

E.1.1.5. - Jones, E. P. Milling Guayule Shrub for Worm Recovery by a New Process (he wants more time to work in the lab. on this process before applying it to Spence Mill). April 27, 1945. 1 page.

E.1.1.5. - Holmes, Raiford L. Hydrogen Cyanide Treatment of Guayule Shrub. (Didn't seem to make much difference.) October, 1942. 6 pages.

E.1.1.5. - Copies of experiments from the Continental-Mexican Rubber Co. files on subject of effect of wood tar, leaching, etc. on shrub milling. April 12, 1926 - January 31, 1928. 55 pages.

E.1.2. - Tingey, D. C. Ensiling Guayule as a Means of Storage. March 15, 1945. 34 pages. Also, a review of report, April 5, 1945. 2 pages. A brief of Report April 4, 1945, 2 pages, 2 copies and 1 copy of an abstract on Report, April 4, 1945. 2 pages.

E.1.2. - Gedney, D. R. Operating Efficiencies of Two Size Batch Mills. March 31, 1944. 2 pages.

E.1.2. - Correspondence and reports on using pressure Jordan Mill instead of a Cautic-Cook. March 2, 1944. 9 pages.

E.1.2. - Miller, G. W. The Emerson Process for Extracting Rubber from Guayule Shrub. September 17, 1943. 2 pages.

E.1.2. - Experiments and a copy of Dr. McCallum's Report on Pebble Milling from Intercontinental Rubber Co. October 26, 1929 - July 16, 1940. 68 pages.

E.1.2. - Patent #843,567, February 5, 1907 to George B. Bradshaw of Brooklyn, NY on Process of Extracting Rubber.

E.1.2.0. - 1 Cross reference sheet.

E.1.2.1. - Miller, G. W. The Milling of Guayule Shrub - An Analysis of the Rubber Recovery Data. March 16, 1943 - December 8, 1945. About 40 pages, 3 graphs.

E.1.2.1. - Miller, G. W. Solids in overflow from Utrus flotation (M-51) at Bakersfield. October 1, 1946. 1 page. Miller, G. W. Report on test of effluent from Bakersville Mill. September 26, 1945. 2 pages, 1 sample of effluent solids on #1 filter paper.

E.1.2.1. - Roberts, Paul H. Spence Mill Operation with Respect to Recovery as Influenced by Feed Rates and Crushing. July 23, 1945. 2 pages.

E.1.2.1. - Miller, G. W. Light Weight Pebbles in Mills at Spence. May 30, 1945. 3 pages, 1 graph. Miller, G. W. Calculated capacity of New 5.5 Feet Diameter Tube Mills for Bakersfield. September 7, 1944. 5 pages.

E.1.2.1. - Several papers on the subject of milling under various conditions and with different age shrub. March 3, 1944 - March 28, 1944. 14 pages.

E.1.2.1. - Three papers on "A Study of Milling Guayule Shrub in Pebble (tube) Mills. July 10, 1943 - July, 21, 1943. 9 pages.

E.1.2.1. - Olson, D. S. Time of Milling Young Shrub. May 22, 1943. 2 pages. Olson, D. S. Note to Mr. Kelley explaining method of setting up paired samples. June 4, 1943. 1 page.

E.1.2.1. - Lee, C. A. Milling Methods - A Study and Discussion on Present and Possible Mill Practice. August 14, 1942. 4 pages.

E.1.2.1. - Copies of several experiments on milling with wood tar and acetone extraction from the Continental-Mexican Rubber Co. files. June 11, 1926 - June 13, 1930. 24 pages.

E.1.2.2. - Just cross reference sheets in this folder.

E.1.3.0. - Tint, Howard. Shrub Examination for Latex After Flash-boiling. May 6, 1944. 1 page.

E.1.3.0. - Jones, E. P. Preliminary Report on Extraction of Rubber Worms by

the Coagulation Process. June 25, 1945. 24 pages, 3 graphs.

E.1.3.0. - Lee, C. Waterlogging of Fibers in Autoclave. June 9, 1944. 1 page.

E.1.3.0. - Plans for Low Pressure Autoclave. Designed by E. A. Meldrum.
February 30, 1944.

E.1.2.3. - Nishimura, M. S., Frank N. Hirosawa and Robert Emerson. Rubber
from Guayule (utilizing a paper Jordan as a milling tool). In-
dustrial and Engineering Chemistry, 39:1477 - 1485, November, 1947.

E.1.2.3. - Miller, G. W. and Kenneth W. Taylor. Extraction of Rubber from
Guayule by Means of a Jordan Mill (Comparison of Jordan Mill with
a Batch Pebble Mill). April, 1946. 19 pages.

E.1.2.3. - Tests of Spence Mill Hordan Installation. BAIC and Guayule Rubber
Extraction Research Unit. December 10, 1945 - December 14, 1945.
April 4, 1946. 18 pages.

E.1.2.3. - Tint, H. Microscopical Examinations of Jordan Mill Effluents.
December 14, 1944. 2 pages. Taylor, K. W. Jordan Milling - 1945.
January 9, 1946. 2 pages.

E.1.2.3. - Rough draft of Press Release by K. W. Taylor, 12/26/45. 2 pages.
(General history through the use of the Jordan Mill).

E.1.2.3. - Wetham, G. S., Sr. The Jordan Engine. Excerpt from Jordan Modern
Pulp and Paper Making. 1942, Second Edition, pages 347 - 348 and
360 and 361.

E.1.2.3. - Letter from Mr. Hayes to Paul H. Roberts, U.S.D.A. Forest Service
regarding the Jordan Mill feed device for factory use. October 12,
1945. 2 pages. Also, April 28, 1945, 3 pages, 2 blueprints.

E.1.2.3. - MacDonald, F. Shrub Analyses. February 13, 1945. 8 pages.

E.1.2.3. - Miller, George W. Operation and Maintenance of Jordan in Commercial
Use. October 26, 1944. 3 pages. Miller, George W. Origin
of the Jordan Concept as Applied to Guayule Extraction. December 7,
1944.

E.1.2.3. - Shrader, P. A. Electric Load Tests on Claflin and Noble-Wood Jordan

Units. July 17, 1944. 2 pages, 1 graph.

E.1.2.3. - Miller, G. W. Series of papers on milling including retting and slurry viscosity. March 20 - April 1, 1944. 14 pages.

E.1.2.3. - Jordan Milling Experiments. March 24 - April 24, 1944. 78 pages.

E.1.2.3. - Taylor, K. W. Report I - A Comparison of Jordan Mills and the Small Batch Type Pebble Mill in the Extraction of Rubber from Guayule. November 15, 1944. 18 pages, 19 tables, 2 graphs, 4 pages. Supplemental comment and plan of Claflin Refiners.

E.1.2.3. - Tint, H. Some Factors Relating to Size of Worms from the Jordan Milling Process. January 18, 1945. 4 pages. A letter from K. W. Taylor to Dr. Emerson suggesting some variations. February 26, 1944. 2 pages.

E.1.2.3. - Miller, G. W. Preliminary Experiments with Jordan Mill. February 3, 1944. 3 pages. Miller, G. W. Program of Extraction Experiments Using the Jordan Mill. November 12, 1943. 3 pages.

E.1.2.3. - Letter from Bob Emerson to George Miller discussing various methods of Jordan Milling. September 13, 1943. 3 pages.

E.1.3. - Cumming, J. M. Density of Rubber in Wet Worms. October 8, 1944. 1 page. Baum, J. H. Shrub Analysis of Milling at LaPaz. Copy of material from Continental-Mexican Co. at Torreon of results of milling LaPaz shrub. March 27, 1944. 8 pages.

E.1.3. - Taylor, K. W. Boiling of Slurries. February 25, 1944. 2 pages. Record of discussion with Dr. McCallum (Dr. McCallum recalls no such Intercontinental Rubber Co.)

E.1.3. - Miller, C. W. Reduction of Benzol Insoluble Matter in Guayule Worms Produced by Pebble Milling - Use of Wilgley Pump. February 1, 1944. 2 pages. Directions for trying out the new Wilfrey Pump.

E.1.3. - Miller, G. W. Problem assignment subject: Methods for reducing benzol insoluble matter in guayule worms produced by pebble milling. Series 800. July 22, 1943. 1 page. Series No. 800-1. Preliminary Study.

E.1.3. - Copies of material from Salinas file of work done by Mr. H. Boucher on Torrean shrub and rubber samples. Also, copies of Exp. No. 211 and 215A to C. 1926 - 1940. 19 pages.

E.1.3.1. - MacDonald, F. A. Discussion of Various Methods of Flotation. July 25, 1945. 13 pages.

E.1.3.1. - Correspondence between the Chain Belt Co. of Milwaukee and F. MacDonald, leader Emergence Rubber Project concerning the design of a flotation tank. (Rectangular with sloping bottom.) July, 1944. 6 pages.

E.1.3.1. - Preliminary Experiments in Cleaning Worms in "Rubber Scrubber." May 23, 1944. 1 sheet (13 samples).

E.1.3.1. - Letter from R. K. Eskew to H. L. Trumbull of the B. F. Goodrich Co. concerning shipments of guayule rubber for testing. August 25, 1943. 1 page.

E.1.3.1. - Copy of Exp. 231 (May 11, 1927) and 231S (April 3, 1929) done by Continental-Mexican Rubber Co. on subject of Floating vs. Sinking Worms.

E.1.3.2. - Cumming, James M. and Ralph L. Chubb. A Novel High Pressure Treatment, April, 1946, 8 pages, 2 diagrams and 3 pictures. Hydrostatic pressure of 1,500 p.s.i. were found to waterlog cork in 10 to 15 seconds whereas the usual method of batch pressure treatment at 250 p.s.i. took 80 minutes (and thus slowed down the process of producing rubber).

E.1.3.2. - Miller, Geo. W. Origin of the paila. February 28, 1946. 1 page. The idea for a compression vessel (paila) is believed to have originated with John Evers, Chief Engineer at Continental Rubber Co., although Hunecke included a description of such a vessel in his patent U.S. #931,121 of 1909.

E.1.3.2. - BAICA: Plans and Development Details. 1945. About 68 pages. (BAICA is a high pressure chamber or unit for waterlogging cork).

E.1.3.2. - MacDonald, F. BAICA Design Recommendation. August 30, 1944. 12 pages. Including diagrams and a picture of unit.

E.1.3.2. - Continuous conversion. Extract from article entitled "Synthetic Schulite as Produced at Salt Lake by the U. S. Vanadium Corp."

Pages 11 - 15 of Mining World for February, 1944.

E.1.3.2. - Taylor, K. W. Study JR-3-A. February 24, 1944. 2 pages. Report on examination of cork and fibers which had settled to bottom of 2nd flotation tank after worms had been boiled. (Cork cells were cracked and broken thus permitting saterlogging.)

E.1.3.2. - Taylor, K. W. Development of Paila Treatment. January 21, 1944. A resume of material reported orally to Mr. MacDonald concerning the origin of the Paila treatment. It seems no one knows for sure who made the first paila, but Dr. McCallum thinks it was developed in response to a need for a faster, more economical and more thorough working process.

E.1.3.2. - Olson, D. S. Wetting Agents. March 19, 1943. In answer to comments by W. C. McGinnies and Evan W. Kelley, Mr. Olson says that the work on wetting agents was dropped as the results were not promising.

E.1.3.2. - From Continental-Mexican Rubber Co. files. Boucher, H. Fine cork material - Catorce. Letter to Mr. Carnahan, May 8, 1940, 2 pages. Also, from Salinas Tech. File 2 copies of Exp. 242S1 on Study of Extraction Losses Resulting from Paila Sinks, June 23, 1930, 5 pages. Caldwell and Spence and 1 copy of Exp. 242 - Summary of Experimental Work on Laboratory Paila, August 26, 1926. 4 pages by J. G. Layne.

E.1.3.3. - (Folder #2). Gedney, D. R. Report on "Effect of cold water scrub in reducing impurities," June 5, 1944, 10 pages including tables and graphs. There was some doubt as to the validity of conclusions reached, but this method of scrubbing was discarded after the first trials.

E.1.3.3. - (Folder #2). Wyllie, E. J. Autoclave - Worms and Cork. March 29, 1944, 2 pages. Information given for five samples of Wild Texas shrub from Spence Mill.

E.1.3.3. - (Folder #2). Taylor, K. W. Use of lime in cleaning rubber worms. February 28, 1944. (Review of information from the Intercontinental Co. files (the company had decided against using lime as Firestone and other rubber companies thought it caused inferior rubber). Also, letters from James M. Cummings, March 17, 1944 and G. W. Miller, February 29, 1944 commenting and adding material to report.

E.1.3.3. - (Folder #2). From file of Continental-Mexican Rubber Co. (Salinas Tech. File). Torreon Rubber Samples, #12, #12A, #13, #14, #14A.

November 15, 1940, 3 pages. H. Boucher, Exp. 237S. Remilling with rubber covered balls vs. Beater Washer Treatment, December 20, 1930, 3 pages. Caldwell and Spence. Exp. 237 S²², Studies of Steam Hydrolysis Pressure, December 2, 1930, 22 pages. Caldwell and Spence.

E.1.3.3. - Letters from Carnahan to Spence and Spence to Carnahan concerning Rubber Ball Manufacture and Worm Scrubbing in Ball Mill. November 18 and 25, 1930. 2 pages.

E.1.3.3. - Exp. 237 S²¹, Worm Washing at 100°F and Room Temp., October 31, 1930, 19 pages. Caldwell and Spence. Exp. 237 S¹⁹, Effect of Soap in Washing in the Absence of Wood Tar. October 20, 1930, 40 pages. Caldwell and Spence.

E.1.3.3. - Exp. 237 S¹⁸, S¹⁹, S²⁰. Letters from Spence to Carnahan and Carnahan to Spence concerning fine rubber passing the screens and rubber balls and effect of hot water on same. November 15, 18, 1930, 3 pages.

E.1.3.3. - Exp. 237 S¹⁸, the Re-use of soap solutions and the elimination of soap. September 19, 1930, 13 pages. Caldwell and Spence. Exp. 237 S¹⁹ - Letter about same to Spence from Carnahan, November 4, 1930. 2 pages.

E.1.3.3. - Exp. 237 S²⁰, Effect of Distilled Water and Lime vs. Soap. September 24, 1930, 5 pages. Caldwell and Spence. Exp. 237 S²³ and S²⁴. Worm Washing in Mills of Four Foot Diameter. October 11, 1930, 6 pages. Caldwell and Spence.

E.1.3.3. - Cleaning of Rubber Worms. Letters from Spence to Carnahan and Carnahan to Spence. June 23, 1930, 3 pages. Exp. 237 S¹¹, Comparison of Hot and Cold Paila Treatment Before Washing, June 23, 1930. 14 pages. Caldwell and Spence. Exp. 237 S¹⁶ (Prelim.) Comparison of Large and Small Worms in Washing. June 21, 1930, 9 pages. Caldwell and Spence. Exp. 237 S¹⁷, Study of the Insoluble Impurities in Guayule Rubber and Practical Means for the Removal of Same. June 17, 1930, 11 pages. Spence. Exp. 237 S¹², Worm Washing in Mills of Large Diameter, June 14, 1930, 17 pages. Spence.

E.1.3.3. - Letters from Carnahan, Spence, and Yeandle concerning the cleaning and drying of rubber worms. May 28, June 5 and 9, 1930, 6 pages. Letters from Spence and Carnahan (2) to each other on improvements in the art of washing rubber. May 27 and June 2, 1930.

E.1.3.3. - Exp. 237 S¹³, Study of Hot and Cold Paila Treatment and of Worm Washing Hot and Cold, June 1, 1930. 3 pages. Caldwell and Spence. Exp. 237 S¹⁴ and S¹⁵. Study of Cold Washing of Worms and Effect of Worm Size on Washing Process. June 1, 1930. 41 pages. Spence.

E.1.3.3. - (Folder #1). This folder is all material from the Intercontinental or Continental-Mexican Rubber Companies from the Salinas Tech. file. (Mostly in letter or exp. form.) Exp. 237. Worm Washing, May 29, 1930. 6 pages.

E.1.3.3. - (Folder #1). Exp. 237 S⁷, Vulcanization Tests on Soaked Washed Worms. May 6, 1930, 3 pages. Letters from Spence and Carnahan to each other. Correspondence between Carnahan and Spence about Washing of Rubber Worms. May 7 - 13, 1930, 6 pages.

E.1.3.3. - (Folder #1). Correspondence between Carnahan and Yeandle on subject of Worm Washing. May 9 - 15, 1930, 4 pages. Correspondence about Exp. 237 - Worm Washing and about Exp. 237 S⁸ - Washing of Catorce Worms, 11 pages, March 25 - May 1, 1930.

E.1.3.3. - (Folder #1). Exp. 237 S⁹, Use of Hot Water in Washing Worms from Dry, Aged Shrub. April 15, 1930, 3 pages. Caldwell and Spence. Exp. 237 S¹⁰, Effect of Mill Speed and Water Temp. in Worm Washing includes Mill Room Reports and record of Tensile Strength. April 12, 1930, 20 pages. Caldwell and Spence. Exp. 237 S⁹, Effect of Various Soaps and Various "Worm-Pebble" ratios on the Washing of Worms. March 30, 1930, 14 pages. Mill Room reports and Tensile Strength Record. Spence.

E.1.3.3. - (Folder #1). Vulcanization Tests on Soap Washed Worms, March 20, 1930, 16 pages. Mill Room Report and Tensile Strength Report. Caldwell and Spence. Exp. 237 S⁸, Washing of Catorce Worms. March 10, 1930 and April 2, 1930. 9 pages. Caldwell and Spence. Mill Room Reports.

E.1.3.3. - (Folder #1). Exp. 237 S⁵, A Continuation Study of Remilling Worms with Rubber Covered Balls. March 3, 1930, 33 pages. Also, Mill Room Records. Caldwell and Spence. Exp. 237 S⁶, Shrub Treatment and Remilling - Two Means of Accomplishing the Same Result. February 13, 1930, 14 pages. Caldwell and Spence.

E.1.3.3. - (Folder #1). Exp. 237 S⁴, The Effect of Time of Remilling with Soap and NH₄OH on the Quality of Guayule Rubber. January 2, 1930, 3 pages. Spence. Exp. 237 S³, Tensile and "Insoluble" Determination on Rubber Worms Milled with Various Reagents in Rubber Ball

Mill. January 2, 1930. 3 pages. Spence.

E.1.3.3. - (Folder #1). Exp. 237 S², Tensile and "Insoluble" Tests on Rubber Worms Milled with H₂O, Soap and ammonia in Rubber Ball Mill. January 2, 1930, 49 pages; all mill room report except first page. Spence.

E.1.3.3. - (Folder #1). Exp. 237 S¹, A Preliminary Test on Washing Washing of Worms by Remilling with Rubber - covered Balls. January 2, 1930, 3 pages. Spence.

E.1.3.3. - (Folder #1). Exp. 238, Letter from Carnahan to Yeandle concerning determination and elimination of free fiber in rubber worms. May 19, 1928, 2 pages. Letter from Yeandle to Spence. Subject: Cleanliness of Product. May 5, 1928, 2 pages.

E.1.3.3. - (Folder #1). Letter to Yeandle from Carnahan on subject of cleanliness of product. May 11, 1928, 1 page. Letter from Yeandle to Spence concerning cleanliness of rubber. April 25, 1928, 3 pages.

E.1.3.3. - (Folder #1). Exp. 237⁷ and 237⁶, Study of Dirt in Rubber, Cold Paila Treatment, also Study of Dirt in Rubber, Effect of Clean Water in the Beater Washer. June 8 - July 29, 1927, 8 pages.

E.1.3.3. - (Folder #1). Exp. 237, 237⁴ and 237⁵ dealing with cold paila. Copies of exp. and correspondence about them. May 14 - June 2, 1927. Exp. 237³, Study of Dirt in Rubber, Factory Beater Washer Experiments, May 10, 1927, 5 pages.

E.1.3.3. - (Folder #1). Exp. 237, Study of Impurities in Rubber. Letters and telegrams from Spence, Yeandle and Carnahan, April 27 - May 7, 1927, 9 pages. Exp. 237, Estimation of Dirt in Guayule Rubber, April 22, 1927, 2 pages. Letter from Yeandle to Carnahan about this experiment.

E.1.3.3. - (Folder #1). Exp. 237, Study of Dirt in Rubber, April 16, 1927, 5 pages. Letter from Spence to Yeandle concerning Exp. 237, April 6, 1927, 1 page. Note from Spence to Yeandle about Exp. 237, March 1, 1927, $\frac{1}{2}$ page.

E.1.3.3. - (Folder #1). Exp. 237, Note from M. L. Caldwell about inability to do further tests as only small samples were saved. February 22, 1927, $\frac{1}{2}$ page. Exp. 237¹, Study of Dirt in Rubber - cleaning worms after Beater Washing. February 22, 1927, 2 pages. Caldwell.

E.1.3.3. - (Folder #1). Spence gives a suggestion for using an alkali in the wash water to digest out a large part of the insoluble matter. February 18, 1927, 1 page. Exp. 237, Letter from Carnahan to Yeandle concerning a procedure in exp. February 17, 1927. 1 page.

E.1.3.3. - (Folder #1). Exp. 237, Explanation by Yeandle of results of exp. February 12, 1927, 2 pages. Exp. 237, Study of Dirt in Rubber - Effect of Lime and Caustic in the Paila. December 12, 1926, 2 pages. Caldwell.

E.1.3.3. - (Folder #1). Exp. 237, Estimation of Dirt in Guayule Rubber. Directions augmenting instructions of August 15. September 26, 1926, 2 pages.

E.1.4. - Results of molecular weight determinations on guayule rubber when dried under various conditions. February 17, 1949, Determination made by J. Meeks, 1 page.

E.1.4. - Kalver, S. Dewatering of Jordan Milled Worms. October 2, 1945, 2 pages. (Rough Draft of Monthly Report.)

E.1.4. - Kalver, Sydney. Drying of Guayule Rubber. May 11, 1945, 2 pages. Cumming, J. M. Suggestions for Operation of Sargent Dryer at Spence Mill. January 25, 1945. 2 pages.

E.1.4. - Nomograph for Belt Speed Calculations. Sargent Dryer Spence Mill. January 5, 1945. 1 page.

E.1.4. - MacDonald, F. Suggested procedure for starting up Sargent Dryer. December 26, 1944, 2 pages.

E.1.4. - MacDonald, F. Dewatering Worms on Vibrating Screen. November 2, 1944, 3 pages. MacDonald, F. Dewatering Guayule Rubber Worms, September 9, 1944, 2 pages.

E.1.4. - Letter from J. M. Montgomery Co., Los Angeles (by John Fiske, Electronic Control Specialist) to J. M. Coglan regarding di-electric drying of guayule rubber and quoting prices for a unit. August 10, 1944, 2 pages.

E.1.4. - MacDonald, Francis, Information on Dryer Design. July 15, 1944, 24 pages.

- E.1.4. - Miller, G. W. Dielectric Properties of Guayule Worms - High Frequency Dryer. February 16, 1944, 2 pages. Taylor, K. W. Electrical Properties of Guayule Rubber, February 15, 1944, 2 pages.
- E.1.4. - Kalver, Moisture contents obtained on worms by various methods of dewatering. 1944, 1 page. Miller, G. W. Letter to Dr. Eskew on results of tests to determine air velocities through the material bed. August 28, 1943, 2 pages.
- E.1.4. - Letter from A. S. Holden of the Coe Manufacturing Co. to Mr. Byrne about power requirements for various size conveyor dryers. August 12, 1943. 1 page.
- E.1.4. - Miller, G. W. Dewatering and Drying of Guayule Rubber Worms (Comparing Oliver Filter and Coe Dryer). August 4, 1943, 6 pages.
- E.1.4. - Large sheet giving a summary of guayule dewatering and drying tests - June and July, 1943. Also, second sheet - a graph of this information.
- E.1.4. - Olson, D. S. Moisture in Worms Dried in Coe Dryer (Young Shrub). July 15, 1943, 2 pages.
- E.1.4. - Miller, G. W. Preliminary Report (Series 300-25-29) on Drying of Two-year-old Worms. July 14, 1943, 2 pages. And one large graph.
- E.1.4. - Letter from H. F. Oswald for the Oliver United Filters, Inc. to George Miller concerning tests the company had made on guayule worms. July 12, 1943, 3 pages.
- E.1.4. - Oswald, H. F. Report of tests conducted; Dewatering guayule worms on Oliver Topfeed Filter at Spence Factory, Salinas, CA. May 12, 1943, 12 pages, 1 graph, 3 pictures of equipment.
- E.1.4. - Letters on the subject of the Rotary Louvre Dryer Test between G. W. Miller, Evan W. Kelley, R. K. Eskew, G. W. M. Phillips of the U.S. Gov't. and M. J. Erisman of the Link-Belt Co., Chicago. October 20 - June 21, 1943.
- E.1.4. - Miller, G. W. The Drying of Guayule Rubber Worms. Preliminary Report on exploratory work in using a circulating air dryer. May 8, 1943, 3 pages and 2 pages of graphs.
- E.1.4. - Correspondence from Mr. M. J. Erisman of the Link-Belt Co. outlining the findings on the operation of the Roto-Louvre Dryer

handling Guayule Rubber Worms. May 4, 1943, 4 pages.

- E.1.4. - Miller, G. W. Visit to Goodyear Buna's Plant at Torrence, CA. Dewatering and drying equipment. March 5, 1943, 3 pages.
- E.1.4. - Miller, G. W. Dewatering Guayule Rubber Worms. December 14, 1942, 8 pages. An outline of results to date for the record.
- E.1.4. - Report of Tests on Methods of Drying Wet Guayule Rubber. Mare Island, Navy Yard Rubber Laboratory, Report #49.3, prepared November 30, 1942.
- E.1.4. - Dewatering Guayule Worms in a Rubber Extruder. Test made by Eastern Regional Research Laboratory representative and Naugatuck Division, U.S. Rubber Co. October 19, 1942, 2 pages.
- E.1.4. - Letter from H. Boucher to Mr. Carnahan concerning Torrean Rubber Samples. December 14, 1940. 2 pages. Letter from H. Boucher to Mr. Carnahan concerning Mexican Rubber samples. May 4, 1940, 3 pages.
- E.1.4. - Exp. 228 S¹⁶, The Dewatering of Worms with the Louisville Continuous Filtering Machine. Tests made at the Pioneer Rubber Co., Pittsburgh, CA. April 30, 1931, 6 pages. Caldwell.
- E.1.4. - Letter from Yeandle to Carnahan concerning cleaning of rubber worms. July 3, 1930. 2 pages.
- E.1.4. - Letters from Spence to Carnahan and Carnahan to Spence on Treatment of Worms and Vacuum Drying. June 17, 23, 1930, 2 pages.
- E.1.4. - Letters from Spence and Carnahan to each other concerning Wood Tar Treatment of Worms. June 3, 9, 1930, 4 pages.
- E.1.4. - Letter from Caldwell to Carnahan concerning air drying tests on Wood Tar Worms (comparison of brass and iron screen trays for use in the drier). March 25, 1929, 1 page.
- E.1.4. - Correspondence between Dr. Spence, Mr. Carnahan and Chas. G. Sargent of C. G. Sargent's Sons Corp. concerning Sargent Dryers for Guayule Rubber (also picture of machine). October 31, 1928 - February 9, 1929, 6 pages.

E.1.4. - Correspondence with C. G. Sargent's Sons Corp. and Spence, Yeandle and Carnahan concerning Rubber Drying. October 25, 1928 - February 21, 1929, 16 pages and blueprint of machine.

E.1.4. - Correspondence between Spence and Carnahan on Experimental Drying of Rubber. No experimental data given. September 18, 22, October 3, 1928, 3 pages.

E.1.4. - Exp. 230 and 230¹, Air Drying Tests on Wood Tar Worms in Current of Air. August 8, 10, 1926. D. Spence, observer. 5 pages.

E.1.4. - Exp. 236, Tests on Pressing of Rubber Worms. August 7, 1926, 1 page.

- E.1.5. - (Folder #1). Correspondence and reports of various experiments undertaken by H. Boucher and others to determine best methods of obtaining rubber from guayule during the period June 1, 1926 - October 31, 1940. (Intercontinental and Continental-Mexican Co.) About 200 pages.
- E.1.5. - (Folder #2). Correspondence and reports of the analytical and physical testing section mostly concerning the use of antioxidants in guayule rubber. 1 copy of a David Spence (Intercontinental Rubber Co.) patent: Extraction of Rubber from Guayule, etc. April 1, 1930, #1,753,185. Also, two copies of a reprint from India Rubber World, January, 1946 by Howard Tint and James M. Cumming, Methods of Applying Certain Antioxidants to Guayule Crude Rubber for Preservation During Storage. 1942 - 1951, about 200 pages.
- E.1.6. - Notes from F. E. Clark concerning use of Polyethylene Lined Bags for shipping guayule rubber (September 29, 1950) and some from G. W. Miller on shipping guayule rubber in paper bags (stuck to bags). (March 7, 1946) and other containers (May 20, 1944). Also, 2 papers on the use of bagasse (as wood flour) (April and May, 1944), 10 pages.
- E.2.0. - Jones, Edwin P., Recovery of Rubber Latex from Guayule Shrub. Reprinted from Industrial and Engineering Chemistry, 40:864, May 1948, 5 pages.
----- Extraction of Latex from Guayule (Also abstract of same), September 21, 1944, 17 pages.
Progress report program of guayule rubber extraction research unit, 16 pages.
Flow diagram, combination Latex-Retting Process (G. W. Miller, 5/17/44), 1 large sheet.
Also, about 75 pages on recovery of latex from guayule, 1940 - 1944.
- E.2.1. - Report on Latex Section Research Unit No. 3 - The effect of lush and dried leaves on latex processing. 9 pages. November 15, 1948.
Murray, C. W. Miscellaneous experiment with guayule in waring Blender. 13 pages. March 22, 1943.
Jones, E. P. and G. Francher. Tests with Tietz disintegrator on guayule shrub; and centrifugal equipment manufactures.
----- Report of trips. January 23, 1948.
- E.2.3. - Jones, E. P. Morco B9 Centrifuge operation with guayule dispersion, 4 pages, August 8, 1949.
Miller, C. W. Latex extraction - coagulation from concentrated vs. weak solution. (3 pages). August 25, 1944.
- E.2.4. - Benedict, H. M. A further study on the nonutilization of rubber as a food reserve by guayule. Bot. Gaz. 111(1): 36-43. September, 1949.

- E.2.5. - Jones, E. A. Oven and sun aging of crude cast film rubber of guayule, Hevea Rubber and Guayule Rubber containing Hevea serum. 7 pages, 4 graphs. July 28, 1949.
- E.2.7. - Retting of bagasse from which a partial recovery in the form of rubber has been made (Cross ref.) - See Report E.O. - BAIC, 5/1 - 5/31/44.
- E.3.0. - Steam bath for evaporating solvents from extraction flasks. 2 pages, 1 fig. July 1946.
Wheeler, L. C. Reduction of insolubles in guayule rubber. February 4 - 8, 1944.
- E.3.1. - Taylor, K. W. and H. M. Benedict. Separation of crude rubbers from various plant fractions from bagase. (Cross ref. - P.R.2.7.). March - April, 1949.
- E.4.0. - 1. Taylor, K. W. and H. M. Benedict, Drying crude rubbers from various plant fractions (Cross ref. - PR2.7). March 31 and April 8, 1949.
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- Reports - Pilot Plant. Various reports on shrub deresination, use of large Jordans, trip to Bakersfield, Factory Design, autioxidants history of shrub materials that went into duplicate samples, retted shrub, experiments to be started, flow sheet f r factory project numbers, project numbering

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- Eastern Regional Research Lab. - General (1945). Correspondence concerning articles to be distributed. Mostly on aspects of determining rubber content of guayule or methods of getting the rubber out of guayule. 23 pages.
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- NR Improvements - General. Painting floor, moving telephone and acquiring two buildings from Alisal Nursery to use for extra space at the pilot plant. 1945, 4 sheets.
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- 209B (July 5, 1929) Routine Analysis on Special Catorce Samples
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- (Aug. 22, 1929) Catorce Exp. on "La Truoba" Shrub
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- (Nov. 21, 1929) Exp. on La Truoba Shrub
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 Willows, Glenn County
 Woodland, Yolo County

Texas

Dillroy, Frio County
 Hebronville, Jim Hogg County
 Hebronville #2, Jim Hogg County
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 Luling
 Pearsall, Frio County

Other States

Tifton Station, Tifton, Georgia
 Picayuno, Mississippi
 Southeastern States (South Carolina, Georgia, Florida, Mississippi)

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- Folder contains:

1. Memorandum for Dr. E. C. Auchter - see previous folder.
2. Blair, E. N. Guayule Rubber Production - see previous folder.
3. List of Publications on Guayule.

- Lloyd, Francis E. Mode of occurrence of Caoutchouc in the Guayule, *Parthenium argentatum* Gray, and its Function. Reprinted from *Plant Physiology*, 7:131-138, 1932, 2 copies. ✓
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- Correspondence between J. P. Levi, G. R. Salmon, V. Ouspensky, E. W. Kelley and W. B. McCallum concerning Seed and Guayule Publications for French Equatorial Africa, Guayule seed for the Soviet Government, notes on growth of guayule plantings in the Southeast, and the volume of wild shrub in Mexico. October - November, 1942, 9 pages.
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- Correspondence from Evan W. Kelley to General Fegan and to the Acting Chief of the Forest Service concerning the need for suitable land for producing guayule seedlings, September 7, 1942, 4 pages.
- Rubber From Guayule, U.S.D.A. Forest Service, September 1, 1942, 7 pages.
- V Houser, E. A. and D. S. leBeau, Studies in Compounding Guayule Rubber. India Rubber World, 106(5): ___, August, 1942, 3 pages.
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- Hinton, James C. New Area Report on Valle Seco and Balle Quemado, July 27, 1944, 8 pages, 1 map.

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- The files - 1940 on (Folder 4). May 5, 1942, From L. G. Polhamus on subject of guayule seed for Argentina. State Dept. opposed the idea and was asked to put that opposition in writing, 1 page. August 25, 1942, The guayule situation present status and future plans, 1 page. May 19, 1942. Cooperation of the Am. Cyanamid Company in guayule test at Parras, Coahila, Mexico, 1 page.
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- Inter-agency Policy Committee on Rubber, 1946. (Folder 12). Recommendations are made to continue research on rubber-bearing plants on a smaller scale. 7 pages.
- Bartlett, H. H. January - December, 1944 and January 1945. (Folder 21). Correspondence between Bartlett and either Brandes, or Polhamas concerning guayule and other rubber projects in Uruguay, Mexico, and Argentina, About 125 pages.
- Bard Mesa Report - 1927 (Folder 24). Rubber content of Parthenium argentatum - page 84. Chemical laboratory work with Parthenium

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- Australia, Morocco, Mexico, 1942 - 1949 (Folder 27). September, 1949 Australia sent two samples of guayule to Salinas for analysis. Letter from R. E. Shapter gives procedure used for drying and preparing the plants for shipment, 2 pages.
- Stand counts and field diagrams. Pearsall, Texas. (Folder 30 - last folder in this group). March 24, 1953. About 20 pages.
- Progress reports (notes). (Folder 31). Pearsall, Texas - 1953. Highlights of selection work and field notes on stands, diseases, etc. About 35 pages.

- Folder #1. Guayule Revival - September, 1946 (about 150 pages).
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 1. List of agronomists and Horticulturists in Guayule Research Project.
 2. Natural Rubber Research Program - M. Polhamus -
 3. List of Books Used by BPIS and AE.
 4. Future Operation of Spence Mill.
- Folder #2. Guayule Revival - 1947 (about 200 pages).
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- Folder #4. Guayule Correspondence - 1951 - 53 (about 100 pages).
 1. The maintenance of stockpiled guayule seed.
 2. On wasteland plantings of guayule as a living reserve of plants for both seeds and rubber production.
 3. Notes on guayule development and production in the United States.
 4. The maintenance of stockpiled guayule seed.
 5. Establishment of reserves of guayule on waste lands.
 6. Guayule as a potential commercial crop for Southwest Texas. (40 pages) with 23 photographs.
 7. Availability of government-owned land for production of guayule (Texas) - 4 pages and map. 5/31/51.

- Folder #5. Guayule Correspondence - about 70 pages, 1951 - 52.
 1. Determinations relating to the guayule stockpiling program.
 2. Results of Guayule Truck Tire Tests.
 3. Seed Stockpiling Correspondence.
 4. Inauguration of guayule nursery project in Texas (9 pages).
R. D. Rands - January 15, 1951.
 5. Revision of plans and budget in Texas.
- Folder #6. Guayule Prospectus.
 1. Organization BPISHE - Research on Strategic and Critical Agricultural Materials (Rubber).
 2. Prospectus of Guayule Rubber.
- Folder #7. 1. Prospectus for guayule pilot planting research in Southwestern Texas.
 2. Guayule Production Areas and estimated costs for nurseries and plantations - September, 1948 (13 pages).
 3. Establishment of 'living reserves' of guayule rubber from the rotated seed stockpiles (13 pages).
 4. Proposed production schedule - Summary of Research and essential future requirements - Guayule (21 pages), September 1, 1950.
 5. Expansion of guayule seed stockpile. (7 pages), November, 1950.
 6. Estimated costs of a 500 acre program to establish stand-by nurseries and to produce seed (6 pages).
 7. Texas guayule project (5 pages), December 28, 1950.
- Folder #8. Guayule Notes dealing with guayule as a potential commercial crop for Southwest Texas. March, 1950. About 20 pages.
- Folder #9. 1. Guayule Rubber Project - Farm Machinery Progress Report. From June 1 through June 13, 1951.
 2. Progress Report - March 9 through March 22, 1951. Field Plantings and Soil Preparation.
 3. Report of Analysis and Tests of Guayule rubber produced by Continental Mexican Rubber Co. at Torreon, Mexico.
- Folder #10. 1. Report of Activities concerning rubber formation carried on at the CA Institute of Technology in cooperation with the Division of Rubber Plant Investigation, Bureau of Plant Industry, Soils and Agricultural Engineering. Appendix A. August 1 - November 1, 1947. (To go with Report #2).
 2. Appendix II - Physiology - Pasadena (29 pages); (To go with Report #2).
 3. Appendix Eb - Physiology - Pasadena (To go with Report #4); (4 pages).
 4. Appendix Ea - Physiology Section - Salinas, for 1948. (To go with Report #4); (30 pages).

- Folder #11. California Reports - Seed Stockpiling. Correspondence, newspaper clippings and reports, 1951 - 52. About 60 pages.
- Folder #12. Texas Reports - Correspondence, newspaper clippings, notes dealing with collecting seeds and seed stockpiling guayule in Texas. About 100 pages.
- Folder #13. P. M. A. Reports, 1951 - 52. Guayule Project - Progress Reports.
- Folder #14. B.A.I.C. Reports:
 1. Report of trip to Torreon, Mexico, May, 19 - 25, 1951 by K. W. Taylor.
 2. Guayule for use in Government Tire Carcass Program 194.
- Folder #15. Texas - Guayule Quarterly Report - Photographs, extensive report, about 40 pages, 1951.
- Folder #16. Bi-weekly Reports:
 1. Seed stockpiling in Texas.
 2. Observation on guayule for diseases. About 60 pages.
- Folder #17. Various correspondence with Dept. of the Navy, White House, Defense Production Administration.
---- Chronology of guayule stockpiling program. 1950 - 51. About 30 pages.
- Folder #18. Correspondence dealing with Mexican guayule project.
---- 1944 - 1946. Insepction of guayule plantings and conferences with guayule investigators in Mexico. About 35 pages.
- Folder #19. Cuayule, the Mexican Rubber Plant, and the prospects for a guayule industry in Chile and Argentina - Harly H. Bartlett. 113 pages. 1944.
- Folder #20. Guayule production Budget:
 1. Determinations relating to the guayule stockpiling program.
 2. Range establishment of guayule.
 3. Availability of Government-owned land for production of guayule.
 4. Legislative History of the Guayule Rubber Program, 1942 to 1951.
 5. Budget - Emergency production of guayule seed and guayule rubber, About 200 pages.

- Folder #21. 1. Guayule Seed Stockpiling - Range Establishment, 1951 - 52.
2. Expansion of guayule seed stock pile - November 9, 1950.
- Folder #22. PMA Guayule Budget. (Production and Marketing Administration, USDA). 1950 - 51. About 60 pages.
- Folder #23. Guayule Reports - Crop planting dates in Texas; Guayule seed and seedling stockpile program; testing guayule in tires; seed multiplication project in CA; variety tests (on 5 varieties), Horn Field, Dilley, Texas; Guayule nursery methods; guayule nurseries authorized. Many newspaper clippings.
- Folder #24. I. B. Johnson Preparedness Subcommittee - Second report on: Surplus Property - Rubber. Senate document no. 240. 81st Congress, 2nd session, 37 pages, 1950.
- Progress Reports of Research on Strategic and Critical Agricultural Materials. Development of Sources of Rubber:
 - Progress Report #1:
 1. Research of Agricultural Research Administration. August 1 to November 30, 1947. 7 pages, with necessary correspondence.
 2. Initial Report, U.S. Natural Rubber Research Station, Salinas, CA, 12 pages, November 14, 1947.
 3. Report of Activities concerning rubber formation carried on at the CA Inst. Tech., August 1 to November 1, 1947. 7 pages.
 4. Report on activities of Dept. Biology of Stanford Univ., 7 pages. November 18, 1947.
 5. Other correspondence dealing with first reports.
 - Progress Report #2:
 1. Strategic and Critical Agricultural Materials - Rubber. 10 pages, June 7, 1948.
 2. Annual Report, U.S. Natural Rubber Research Station, Salinas, CA. 12 pages.
 3. Report of BPIS and AE, May 27, 1948.
 4. Physiology. Appendix I. By H. H. Benedict. 13 pages.
 5. Proposed Plant Breeding and Genetic investigations with guayule, by LeRoy Poroen, April 15, 1948. Appendix III, 4 pages.
 6. Genetics - Salinas, by D. U. Gerstel. Appendix IV. 6 pages.
 7. Genetics - Stanford, by Reed C. Rollins and Mary E. Riner. Appendix VI. 6 pages.
 8. Agronomy Section, by A. S. Hunter. Appendix VII, 5 pages.

- Progress Report #3. Research on Strategic and Critical Agricultural Materials - Rubber. June 1 to November 30, 1948. 12 pages.
 1. Progress Report, U.S. Natural Rubber Research Station, Salinas, November 15, 1948, 14 pages.
 2. Agronomy Section, by A. S. Hunter, Appendix A. 5 pages.
 3. Genetics Section, by D. U. Gerstel. Appendix B. 9 pages.
 4. 1948 Guayule seed collection from Mexico, by Bayard L. Hammond, November 1, 1948. Appendix Ca. 30 pages, illus.
 5. Notes on the Flora associated with the guayule population visited in August of 1948 in the States of Mevo Lion, Chihuahua and Coahuila by Messrs. Bayard Hammond and James Hinton. Appendix Db, 21 pages with map.
 6. Physiology Section, by H. N. Benedict. Appendix D, 16 pages.Correspondence.

- Progress Report #4. Research on Strategic and Critical Agricultural Materials - Rubber. December 1, 1948 to May 31, 1949. 16 pages.
 1. Summary Report, Natural Rubber Research Station, Salinas, CA. 6 pages.Correspondence.

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 1. Annual Report, U.S. Natural Rubber Research Station, Salinas, CA. April, 1950, 14 pages.Correspondence.

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- Progress Report #8. Research on Strategic and Critical Agricultural Materials - Rubber. December 1, 1950 to May 31, 1951. 8 pages.
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- Progress Report #9. Research on Strategic and Critical Agricultural Materials - Rubber. June 1 to November 30, 1951. 11 pages.
Correspondence.
Incl. Salinas Report and the Texas Report.

- Progress Report #10. Research on Strategic and Critical Agricultural Materials - Rubber. December 1, 1951 to May 31, 1952. 15 pages.
Correspondence.

Reports, Research Notes, Correspondence,
Costs, Photographs

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- Progress Report # 11. Research on Strategic and Critical Agricultural Materials - Rubber. June 1 to November 30, 1952. 10 pages. Correspondence.
- Progress Report #12. Research on Strategic and Critical Agricultural Material - Rubber. December 1, 1952 to May 31, 1953. 13 pages. Correspondence.
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- Progress Report #13. Research on Strategic and Critical Agricultural Materials - Rubber. June 1 to November 30, 1953. 4 pages. Correspondence.

- Folder #1. Guayule - 1946:

1. Special Guayule Research Program for Fiscal Year 1946. 14 pages. Costs, Personnel, etc.

2. Rubber - Development Investigations, 12 pages. (Statement for Sub-committee on Agriculture Dept. Appropriations Bill, 1946.

3. Various correspondence.

4. Publications:

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G22 - Campbell, W. A. and J. T. Presley, Diseases of Cultivated Guayule and their Control. USDA, Circ. No. 749:1 - 42. 1946.

G26 - Federer, W. T. Variability of certain seed, seedling and young-plant characters of guayule. USDA, Tech. Bull. No. 919:1 - 25. 1946. ✓

G27 - Traub, H. F. Rapid photometric Methods for Determining rubber and resins in guayule tissue and rubber in crude rubber products. USDA, Tech. Bull. No. 920:1 - 37. 1946. ✓

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- Folder #2. Guayule - 1947:

1. Observations and suggestions regarding guayule plantings in the vicinity of Torreon, Mexico. September, 1947. Report by A. C. Hildreth, 18 pages.

2. Various correspondence, 1947.

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Erickson, L. C. and H. M. Benedict, Origin of the seed coats in guayule. Journ. Agri. Res. 74:329 - 334, illus. 1947. ✓

- Folder #3. Guayule - 1948:

1. Conference on the Development of Low Temperature Resistant Rubber - 4 pages. December 28, 1948.

2. Plan for studies on possible contribution of guayule rubber under Arctic temperature conditions - 3 pages. December 16, 1948.

3. Benedict, H. M. The effect of Weste products from the guayule rubber mill on the growth of various crops. Journ. Amer. Sec. Agronomy, 40:1005 - 1016. 1948.

- Folder #4. Guayule - 1949:

1. Hybrids promising for rubber production from guayule. Illus. report. October, 1949. 12 pages.
 2. Application to Office of Naval Research for Contract for guayule rubber investigations. CA Inst. Tech. August 4, 1949.
 3. Agronomy Experiments No. 30 - 49.
 4. History of guayule rubber production, 6 pages. By I. C. Feustel and H. M. Tysdal. December 2, 1949.
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- Folder #5. Guayule - 1950:
1. Various correspondence dealing with guayule project.
 2. Guayule as an emergency source of rubber. September 1, 1950. 15 pages; Appendix A, 6 pages.
- Folder #6. Guayule - 1951:
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 2. Inauguration of guayule nursery project in Texas. 9 pages, report by R. D. Tands, January 15, 1951.
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- Folder #7. Guayule - 1952:
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 2. Rubber in guayule in South Australia. Bull. No. 270, Common Wealth Sci. and Industr. Res. Organiz., Australia. 31 pages, 1952, illus.
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- Folder #9. Guayule - Bi-weekly Reports - Regarding guayule seed stockpiling. 1951 - 1952. Various correspondence.
- Folder #10. Guayule Breeding Project:
1. Various correspondence, 1944 - 1947.

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- Guayule - Texas: Various correspondence - Beeville, Chillicothe, Spur, Temple and Ysleta. 1947.

- Folder #11. Stanford Research Project - Reports. W. E. Rand, Project Manager:
 1. Progress Report No. 6, covering period April 1 - 30, 1947. May 19, 1947.
 2. Progress Report No. 5, covering period March 1 - 31, 1947. April 16, 1947.
 3. Progress Report No. 3, covering period January 1 - 31, 1947.
 4. Natural Rubber Research Project, Final Report, July 31, 1947. 97 pages, illus.

- Folder #12. Monthly Reports of Guayule Project - Santillo, Coah., Mexico. September, 1944 to November, 1945.

- Folder #13. Guayule - Mexico:
 1. Correspondence, paper clippings.
 2. Ecological Survey of the Durango Highlands from dry-farmed guayule viewpoint. 26 pages, illus.
 3. Rainfall Records; temperature records.
 4. The guayule situation in Mexico. 7 pages. April, 1942.
 5. Hargis Reports - 1942 - on wild guayule in Mexico. 64 pages.
 6. Detailed report of reconnaissance land investigations in the Grassland and irrigated desert regions of Durango and adjacent areas in Mexico for the immediate purpose of possible guayule production, by M. M. Striker. 30 pages.

- Folder #14. Correspondence dealing with guayule, Bayard L. Hammond:
 1. Monthly Progress Report, by B. L. Hammond; November, 1943. Genetic Studies.

- Folder #15:
 1. Correspondence dealing with guayule - H. H. Bartlett. @500 pages. Especially with Mexico.
 2. U. S. Weather Bureau, Confidential Report on South American Areas Climatically suited to guayule. 1942.

- Folder #16. Correspondence with R. E. Baker, Superintendent, Plant Introduction Garden, Chico, CA. 1943 - 1945.

- Folder #17:

1. Photographs - Guayule - field crop.
2. Guayule as a rubber softener.
3. V. F. Nikolayev. The singling out of botanical forms and selection in the rubber plant guayule (Parthenium argentatum Gray).
4. V. Nicolaieff. The morphology and classification of the guayule plant. Bull. Appl. Bot., Genetics and Plant Breeding, Leningrad, 5:209 - 276. 1929.
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- Folder #18. Stockpiling - Guayule seed and seedling reports. January, 1951 - November, 1952. Salinas, CA.

- Folder #19. Bi-weekly Reports on Guayule Stockpiling in Texas and CA. 1951.

- Folder #20. Guayule Reports:

1. Gauyule Situation in Mexico - 6 pages. April, 1942.
2. Report on Guayule Survey of the Trans Pecos Region of Texas, by W. T. Carter. April, 1942.
3. Reports on guayule rubber, source of guayule shrub and information on the rubber work of the Dept Agric to the Dept State. June, 1942.
4. Germination Chamber for sugarcane and guayule seed treatment. March, 1942. By E. W. Brandie.
5. Agreement between CA Inst. of Tech. and Intercontinental Rubber Co., September 12, 1940.

- Folder #21:

1. Estimates for Expansion of the Guayule Project - Fiscal Year 1943. About 200 pages.
2. Correspondence dealing with budgets and costs for 1942 - 1943.

- Folder #22. Estimates, Budgets, Costs for guayule program for 1944. About 400 pages.

- Folder #23. Estimates, budgets and costs for guayule project for 1945. About 250 pages.

- Folder #24. Estimates, budgets and costs for guayule project for 1946. About 300 pages.

- Folder #25. Estimates, budgets and costs for guayule projects for 1947. About 20 pages.

- Folder #1. O. F. Curtis report on mowing (pollarding) as a possible harvest method in guayule culture. 60 pages, illus. 1948 (msc.) With correspondence regarding same.
- Folder #2. Correspondence on guayule - 1942:
 1. Cooperation with the U.S. Indian Service in the planting of guayule or other shrubs.
 2. Test Planting Stock for B.P.I.
 3. Amount of guayule plant in Texas.
 4. Proper planting of guayule test plots.
 5. Correspondence to coordinator of Inter-American Affairs.
- Folder #3:
 1. Cost of production - post war - 1945, 4 states.
 2. Correspondence, reports and final copy of report for costs of guayule production. January 29, 1945. About 200 pages.
 3. Guayule rubber - hearing before Comm. on Agriculture, House of Representatives, HR 6299. Serial F. 113 pages, 1942. (1 copy).
- Folder #4. Guayule 1942 - 1946:
 1. Correspondence on guayule production, about 70 pages. 1942 - 1946.
 2. Guayule development - prior to 1942. 22 pages. December, 1944.
 3. Rubber production, Breeding and Disease Investigations (of guayule).
 4. Expansion of the guayule program beyond the limits attainable by use of present supply of planting stock. 5 pages, 2 maps, 1946.
 5. Progress reports and production data; some photos; about 200 pages, 1942.
- Folder #5. Guayule program - 1942 to 1946 - Forest Service:
 1. Correspondence dealing with program and liquidation of Emergency Rubber Project.
 2. Displacement of other crops by guayule.
 3. Proposed cooperation deresination work at Torreon.
 4. Future of the guayule program - 1943.
- Folder #6. Gauyule Seed Experiments - 1952. 15 pages.
- Folder #7:
 1. Guayule pathology report - covering period from January 1, 1953 to March 31, 1953, by D. C. Norton. March 31, 1953.
 2. Brief notes during visit to guayule project at Pearsall, Texas by Dr. R. D. Rands. March 15 - 16, 1953. April 2, 1953.
- Folder #8. Report of Field Trip to Spain, May 11 to June 1, 1953; by

H. M. Tysdal - to study guayule work in Spain. 26 pages.

- Folder #9. Correspondence of H. H. Bartlett dealing with growing guayule in various countries in South America - 1943 (January - December). About 100 pages.
- Folder #10. Correspondence of H. H. Bartlett, dealing with growing guayule in various countries in South America - 1942 (January - December). About 1,000 pages.
- Folder #11:
 1. A unified program of natural rubber research - Stanford Research Institute - May 29, 1947. 15 pages, illus.
 2. Notes on conferences to CA concerning the guayule research project from May 29 to June 15, 1947.
- Folder #12. Recovery of rubber from two-year old guayule. By R. E. Eskew et al. 39 pages, 10 tables, 5 charts. July 1, 1943.
- Folder #13. Correspondence with E. G. Holt dealing with Chilean guayule. 1941 - 1942. About 30 pages.
- Folder #14. Production of rubber from guayule:
 1. Congressional Record - Senate 77th Congress, First Session, 87: 10361 - 10363. 5 pages. December 23, 1941.
 2. Emergency sources of rubber and rubber substitutes 1942 - 1950. Prepared by Div. Rubber Plant Invest., B.P.I. 16 pages.
 3. Estimate showing for 1943 - 1953 a constantly adjusted coordination of potential rubber sources to meet essential needs.
 4. Guayule rubber as a possible emergency source of crude rubber in the United States (2 pages).
 5. U. S. embarks on synthetic rubber plan, by R. C. Albright - Washington Post, Wed, December 24, 1941.
 6. Correspondence to E. C. Auchter, B.P.I., U.S.D.A. concerning production of guayule - 1941.
 7. H.R. Bill 5030 - providing 45,000 acres for guayule production.
 8. H.R. Bill 6299 - need for work on rubber resources.
- Folder #15:
 1. Acclimation of guayule in the U.S.S.R. by T. V. Frolov. Sovet. Subtropiki, 1939 (No. 2 - 3):77 - 81, illus. 1939. Translation.
 2. Outline of methods for using guayule plants for hillculture experiments, 2 pages.
- Folder #16. Misc. Correspondence for 1946 - 1947. About 15 pages.

- Quarterly Report of War Activities (Rubber Plant Investigation.) Proposed ecological study of the Southwest relative to the growing of guayule. (C. H. Muller to L. G. Polhaus). 3/20/42, 3 pages. Report of guayule investigations carried out at the CA Institute of Technology, October, 1940 - April, 1942. By J. Bonner, 6/9/42, 9 pages. List of patents relating to rubber plants from March 13, 1906 - December 13, 1927, 6 pages. Requesting suggestions on construction of a seed storage house for guayule rubber seed (E. W. Brandes to Victor R. Boswell), April 11, 1942, 1 page. Guayule - general information on growing guayule (doesn't include planting), 2 copies, 26 pages each. L. 7/1/41. List of plants as rubber possibilities as received through mail beginning July 30, 1942, 3 pages. Compiled for Mr. Polhamus. Rabbit damage to guayule test plantings and possible nursery diseases (root rot). 6 pages. April 24 and 27, 1942. W. A. Campbell. Telegrams (10 of them) February 24, 1942. To various men concerning indicator plantings of guayule. Memorandum for Dr. E. C. Auchter concerning guayule rubber and whether it could fill the gap in an emergency. June 13, 1941, 5 pages. Some facts about guayule. Sent to Hon. Harold D. Smith and Hon. H. F. Fulmer to defend recommendations for guayule planting (45,000 acres), 18 pages, July, 1941. Reports 1 and 2 on estimated yields and costs of producing guayule rubber if authorized. 4 pages (no date). Yields and costs if guayule rubber is produced on a continuous basis of planting 700,000 acres each year, 7 pages. Guayule as an emergency source of crude rubber. 4 pages. Guayule rubber production project - a radio talk by C. M. Granger and John C. Baker, March 12, 1942, 2 pages. Winters, S. R. Guayule, Buick Magazine, 7(2): May, 1941, 1½ pages. Finley, Harold M., What about this new rubber industry? Los Angeles Sunday Times, Sunday Morning, November 27, 1927, Pages 1, 6, 8, 9, 14. (Pictures on pages 84-9). McCallum, W. B. The Cultivation of Guayule - I and II, India Rubber World, 105(1): 8 pages, October 1, 1941, New York, New York.

- Campbell, William A. (Salinas). (Associate Pathologist). Correspondence concerning fungus damage to guayule and fungicides to be tried. April 4, 1942 - March 4, 1943. 49 pages.

- Hildreth, A. C. (Project Leader) (Salinas). Correspondence to and from Hildreth concerning storage of guayule seeds; closing out the guayule project; a visit from Senor Don Jorge L. Sola, Agricultural attache of the Argentine Embassy; Testing of guayule samples. December 10, 1942 - July 1, 1946. About 414 pages.

- Holmes, Raiford L. (Rubber Technologist) (Salinas). Correspondence concerning his job and getting other people to work at Salinas or oversee the fields; analysis of samples from indicator plots taken in February, 1944; proposed fertilizer experiments; McCallum's report on Texas plantings; irrigation experiments; tentative plans for the proposed laboratory at Salinas. February, 1942 - November 1944. About 100 pages.
- Ezekiel, Walter N. (Plant Pathologist) (Salinas). Some Diseases of the Guayule Plant, *Parthenium argentatum*. (Preliminary memorandum, January 15, 1942). 19 pages.
- Muller, Cornelius H. (Assistant Botanist) (San Antonio, Texas). Correspondence concerning job (trying to find out what he is to do and under whose directions); seed distribution to Dr. Baldwin; proposal for ecological study of the Southwest relative to growing guayule; cooperation with Mr. Cooperrider (survey of wild guayule). March 6, 1942 - September 21, 1942, 28 pages.
- Presley, John T. 1942 (Associate Pathologist) (Sacaton, Texas). Correspondence concerning investigations on disease of guayule (And 1 copy of report on same - September 1, 1942); Also, a report on crocon rot of guayule seedlings caused by sclerotinia; March 22, 1942 - December 17, 1942, 59 pages.
- Richard E. Baker ("Agriculturist") (Saltillo, Mexico). Correspondence detailing work to be done, personnel, finances, etc; also, discussing problems with the guayule plants (dormancy), lack of equipment and men. Weekly reports as sent to Mr. Polhamus. February 25, 1943 - July 22, 1944, about 100 pages.
- Guayule Research Project - Mexico. General information such as: Monthly reports (1945). Project outline November 1, 1944, report on indicator plantings, June 27, 1944. 1944 - 1945, 69 pages. Also in folder are 58 pages of reports on Goldenrod.
- Flores, Robert E. (Assistant Agronomist) (Mexico). Letter of resignation and answers from W. Gordon Whaley and Loren G. Polhamus both of whom asked him to stay on until his successor arrived and got settled.
- Long, E. M. (Continental-Mexican Rubber Co.) (Mexico). Letter and report on Dr. Long's work from May 15, 1943 - June 21, 1944. 7 pages.

- Striker, Marion M. (Mexico). Worked on cryptostegia and then guayule.
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- The rest of this box is material on Kok-saghyz and Goldenrod.

- Guayule: Final Report for Experimental Unit at Yuma, Arizona. February, 1943 - May, 1944. Charles Homer Davis and George H. Abal, Jr. Includes all phases of preparing, planting, fertilizing, irrigating, etc. the guayule plantings. 158 pages.

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against Insects Attacking Guayule. USDA E-672, October, 1945, 16 pages.

Blanchard, Alan J. (Revised by Anne Avakian and Ruby W. Moats),
Guayule, A list of references, USDA, Library List #10, July, 1944,
61 pages.

Jones, E. G. and S. G. Wildman. A Rapid, Semi-micro Method in Plant
Analysis of Rubber in Plant Material, May, 1943, 13 pages.

Guayule Culture based on experience of the Intercontinental Rubber Co.
and the Forest Service in Salinas Valley, CA. 18 pages, September, 1942.

Baumhofer, L. G. Potential Insect Enemies of Guayule. U.S.D.A., Bureau
of Entomology and Plant Quarantine. April 15, 1942, 13 pages.

List of publications on Guayule, 3 pages (no date).

Guayule Rubber as a Possible Emergency Source of Crude Rubber in the
U.S. USDA, Bureau of Plant Industry. 1 page, no date.

Literature on Rubber, USDA CA-3, September, 1927, 6 pages.

Research Gains in Guayule Rubber Plant Reported by U.S.D.A., October 16,
1950, 2 pages.

Presley, John T. The Effect of Sclerotium rolfsii on Guayule.
December 28, 1942, 2 pages including 2 pictures.

"Club leaf" of Guayule Caused by a Gall-fly; 6 pages including pictures
of infected plants and 15 pages of correspondence concerning this report.

- 1943 Annual Report - Field Production Machinery Development - Guayule Emergency Rubber Project. Part III. Blueprints and Specifications of Four-row Guayule Seed Harvester for Larger Shrubs. Parts VII and VIII. Assembly Blueprints.
- 1942 Annual Report - Guayule Emergency Rubber by S. W. McBirney. 65 pages. (War Activity BACE - FM - 15). 1942.
- 1. Financial Statements; Cooperative agreement with Forest Service and other related correspondence - S. W. McBirney - 1942.
2. Guayule as a Source of Rubber by R. B. Gray, 1942.
- Notebook of various types of farm equipment.
#9 - Guayule Harvester.
#21 - Topping Machine, Guayule Nursery Bed.

Records in National Archives
Farm Machinery Div., Bur. Plant Industry

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- Emergency Rubber Project - Seed and Nursery Operations Handbook. (Revised May - June, 1946). Plantation Harvesting. (July, 1946). U.S.D.A., Forest Service, about 100 pages.
- Guayule Emergency Rubber Project. Plantation Management and Irrigation Practices, 1943. USDA, Forest Service, about 100 pages.
- Negatives with 1 print of Photographs taken at Salinas, CA. Sa la to Sa 35; Sa 3b to Sa 65c. With letter from S. W. McKirney, October 21, 1943.

- Programs of work and project reports - 1950-51. Guayule.
 1. Expanded guayule research program.
 2. Farm Machinery Progress Report.
 3. Progress Reports - Seeding. Mainly from A. H. Moseman, 1950.
- Guayule Production Project - Photographic Album - February 1 to June 15, 1951. (57 photographs showing various stages of cultivation).
- Colored slides - guayule project 1943 - S. W. McBirney. (Seem to be duplicates of the Sa series).

Box 1 - NR - Improvements E. Bakersfield Mill - General Correspondence, 1941.

NR - Improvements E. Bakersfield Mill - General Correspondence. Engineering File - 1945-46. About 200 pages.

Emergency Rubber Program - Machinery Blueprints for Screw Feeder for Pebble Mill. 2 sets of prints.

NR - Improvements E. Bakersfield Mill - 1944-45. Specification for lining Pebble Mills. Spec. No. ES-42. February 19, 1945.

NR - Improvements E. Bakersfield Mill:

1. Weekly Progress Reports - September 23, 1944 to April 23, 1945.
2. Weekly Report of Expenditures on Bakersfield Mill - September 11, 1944 to March 13, 1945.
3. Materials and Equipment received at Mill - December 2, 1944 to February 26, 1945.

NP - Improvements E. Bakersfield Mill - Log of Construction of Bakersfield Mill - December 13, 1944 to April 20, 1945. By Harold R. Williams.

Box 2 - NR - Improvements - E. Bakersfield Mill. Correspondence, contracts and Blueprints for construction.

Box 3 - NR - Improvements E. Bakersfield Mill. Various contracts for construction. 1944-1946. Blueprints and correspondence.

Box 4 - NR - Improvements - E. Bakersfield Mill. Correspondence, contracts, and blueprints about machinery.

Box 5 - NR - Improvements - E. Bakersfield Mill. Blueprints, correspondence, and contracts on machinery.

Box 6 - NR - Improvements - E. Bakersfield Mill - Correspondence, Blueprints and contracts dealing with machinery.

Box 7 - NR - Improvements - E. Bakersfield Mill. Boxes 7, 8, 9 - Correspondence, contracts and blueprints - dealing with machinery for Bakersfield Mill.

Box 10 - NR - Improvements - E. Bakersfield Mill. Blueprints (only).
to 11

Box 12 - NR Control - Diseases of Guayule - Diplodia, Phytophthora, Verticillium

Wilt, Phthium; Dodder. About 190 pages.

1. Guayule Plantation Diseases and their control - August, 1944.
2. Guayule Nursery Diseases and their control - May, 1944.

NR Control - General - CA 1943 to 1946. Insect, Rabbit, Ants, Wire-worms; about 100 pages:

1. Insect pests of guayule grown in the greenhouse, by G. J. York and U. E. Romney. (S-44-44).
2. Insect affecting guayule in Texas and New Mexico in 1943, by W. D. Buchanan.

NR - Cooperation - Agricultural Adjustment Agency (AAA). Correspondence, 1942-43. About 60 pages.

NR - Cooperation - Bureau of Agricultural and Industrial Chemistry. 1943-45. About 240 pages.

Box 13 - NR - Cooperation - RE and DB. Mainly correspondence. About 120 pages.

Box 12 - NR - Cooperation - Bureau of Agricultural Chemistry and Engineering - 1942. Correspondence. About 20 pages.

NR - Cooperation - CA Inst. of Tech. - RE and DB - 1943-44. Correspondence. About 20 pages.

NR - Cooperation - CA Inst. of Tech. - 1942-43. Correspondence. About 100 pages.

NR - Cooperation - Bureau of Entomology and Plant Quarantine. 1942 to 1945. Correspondence and regulations. About 150 pages.

Box 13 - NR - Cooperation - Foreign Countries - 1942, 1943, 1944 and 1945. Correspondence. About 1,000 pages.

NR - Cooperation - Foreign Countries (Mexico) - 1942, 1943, 1944, 1945. Correspondence. About 1,000 pages.

Box 14 - NR - Cooperation - Farmer Contracts. 1942, 1943, 1944. Correspondence, contracts, etc.

NR - Cooperation - Guayule Rubber Committee - Correspondence. About 800 pages.

NR - Cooperation - Navy Dept. 1942-1945. Correspondence. About 50 pages.

NR - Cooperation - U.S. Navy (11th Navy District) - Use of Lands in Santa Margarita Ranch, Camp Pendleton. Correspondence, map. 1942-43.

NR - Cooperation - U.S. Navy - Div. of Plant Management - CA - Santa Margarita Ranch - 1943.

Box 15 - NR - Cooperation - BPIS & AE. Agreements, cooperative relationships and programs, 1942 to 1946. About 1,000 pages.

Box 16 - NR - Cooperation - BPIS and AE. Indicator plots for guayule 1943 - 1945. CA and Arizona. About 400 pages.

NR - Cooperation - BPIS & AE - Development Work on Seed Collection Machine - McBirney. About 30 pages.

NR - Cooperation - BPIS & AE. Soil Survey - Correspondence. About 40 pages.

Box 17 - NR - Cooperation - BPIS & AE - Indicator plots for guayule - Texas, CA, New Mexico. 1943-1946. About 1,000 pages.

NR - Cooperation - BPIS & AE - Research Areas - 1943. About 40 pages.

NR - Cooperation - BPIS & AE - Monthly Reports on Experimental and Indicator plots. 1943. About 200 pages.

Box 18 - NR - Cooperation - Bureau of Reclamation - Central Valley Project Studies, Problem No. 1. "Guayule Production in Wartime from the Central Valley Project." 1942 to 1944. About 900 pages.

NR - Cooperation - Rubber Companies - Contracts and Agreements - 1942 to 1945. About 300 pages.

Box 19 - NR - Cooperation - RE & DB - Rubber Directors Office, Research Compounding Branch - Work on underresinated guayule. 1944.

NR - Cooperation - San Diego County - BM & P - 1942 to 1944. Construction of Camp and use of prisoners. About 300 pages.

NR - Cooperation - Cooperative Work with Texas Experiment Stations. 1944 - 45.

NR - Cooperation - War Relocation Authority. 1943-45. About 300 pages.

NR - Cooperation - General - Correspondence - CA - 1943 to 1946. About 230 pages.

NR - Cooperation - Rubber Reserve Co. 1945. About 250 pages.

NR - Cooperation - Div. of Plant Management - Sending guayule seed to

interested farmers. September 1, 1942.

Box 20 - NR - Finance Estimates. 1942-46.
to 23

Box 23 - NR - Harvesting - Accomplishment CA - 1945-46. Harvesting in General -
CA 1943 to 1946. About 100 pages.

Box 23 - NR - Information - Press Releases - Clippings - 20 folders of newspaper
to 25 clippings. 1942 - 1946. (Partly Box 25)

Box 25 - NR - Information - Historical Legislation - 1942-46.

Box 26 - NR - Information, Special - Historical:

1. S and CI.
2. Visitors.
3. Misc.
4. Report of Inspection of Guayule Rubber Industry, by Gilbert Van
B. Wilkes and Dwight D. Eisenhower, June 6, 1930.
5. Report on Guayule Plantings of USDA. July 4 - 28, 1943, by
John Caswell.

Box 27 - NR - Information Special - Historical - 1945-46.

Technical Information on Planting, Cultivation, Harvesting and Pro-
cessing of the Guayule Shrub. 22 pages, illustrations. Rubber Lab.,
Mare Island Navy Yard.

NR - Information - Historical - Trumbull Committee Report. 1945.

Individual Field Record. Southern CA and Colusa Districts and Salinas
District. 2 notebooks, compiled by E. L. Perry. February 1, 1946.

Box 28 - NR - Information Reports - Equipment. Individual Field Record, Bakers-
field District. Compiled by E. L. Perry 1, 1946.

Box 29 - NR - Information - Historical (S-329-43). Also packet of newspaper
clippings.

Box 30 - Photographs of various stages in planting, cultivation seed pickers,
nursery machinery and harvesting guayule. 1942-46.

Box 31 - NR - Information Reports - Individual Field Record - Tracy-Newman District.
Compiled by E. L. Perry. February 1, 1946.

Administrative Digest - Emergency Rubber Project No. 1 to No. 89.
November 16, 1942 to May 29, 1946.

NR - Information - Information Reports No. 1 to 118. 1942 - 1946.

Box 32 - NR - Inspection, Management, Inspection of Supervision 1944-45. About 250 pages.

NR - Irrigation. Costs, Methods. 1942-46.

Packets of irrigation data for various ranches, 1943-1944.

Box 33 - Legislative History of Emergency Rubber Project. Legislation, Federal (Anderson Resolution). 1944.

Box 34 - NR - Legislation and Organization, Federal. Hearings, Appropriations (House of Rep.); Navy Dept., Forest Service. 1942-44. Organization charts. 1943.

NR - Nurseries, Div. of Plant. Management. CA, 1943-1945. 1 page.

Box 35 - NP - Plans, General - CA, 1942-45. About 150 pages.

1. Guayule Research Programs, 1946. About 100 pages.
2. Liquidation, CA, 1945-46. About 100 pages.

NP - Plans, Objectives:

1. Material regarding various plans and programs submitted to Rubber Director. 1943. About 600 pages.

NR - Objectives. Domestic Rubber Program - Poage Bill - Milling Out Program. 1945. About 300 pages.

NR - Plans, Objectives. Guayule Facts and Figures. January, 1944.

Box 36 - 1. NR Plans - Objectives, Texas Program, 1943.

2. NR Plans - Guayule Expansion in Summer and Fall of 1942 - Objectives.
3. NR Planting - Investigations, Survival Summary Sheets for 1943 and 1944. About 500 pages.

Box 37 - (FS-No.20) Folder 1:

NR Planting - General - CA 1944-45.

1. Equipment - Instructions for operating dirt pushers. July 20, 1945. By George V. Hjort. 5 pages, illus.
2. Rate of wear of tillage tools in various soil types.
3. San Mateo Navy lands - plantings.
4. Construction of Hawkinson hoe horse, with diagrams.

5. Fertilizer trials.
6. Results of Trial of shrub baling equipment.

Folder 2. NR Planting - General - Salinas, Statistics - 1943:

1. Acreage in Tracts and Fields.
2. Survival counts - Salinas District.
3. Records of Acres planted daily by machines.

Folder 3. NR Planting - General CA, 1943:

1. Safety measure for pressure adjustment control on Holland Planting machines.
2. Studies on Mechanical Improvements in the Holland Mech. Trans-planter.
3. Hand Planting Techniques.
4. Final Planting Report - Crop Year 1943 (August 4, 1943).
5. Other correspondence dealing with plantings.

Folder 4. NR planting - General - CA, 1943:

1. Revision of Planting Report.
2. Final Planting Report for Crop Year 1943 - Modesto, CA; El Paso, Texas; Salinas, CA; Bakersfield, CA; Colusa, CA; Salt River, Ariz.

Folder 5. NR Planting - General - Plantation Maps - 1943.

Folder 6. Plantation Management - Forms Handbook.

Folder 7. NR - Resources, Guayule (Mexico) - 1942. Occurrence and growing of guayule in Mexico - Correspondence - about 60 pages.

Folder 8. NR Resources, Guayule (Texas) - 1942:

1. Native guayule in Big Bend Country of Texas, by LeRoy Powers.
2. Protection of wild guayule in Big Bend Country.
3. Amount of guayule in Texas.
4. Other correspondence dealing with occurrence of guayule in Texas.

Box 38 - (FS-No.20). Folder 1. NR Resources, General - 1942-43. Correspondence on occurrence of guayule in various areas.

Folder 2. NR Sales - Seedlings:

1. Seedlings for Continental-Mexican Rubber Co. - 20,000,000 seedlings shipped.

Folder 3. NR Resources - Seed - CA, 1944-46. Various correspondence dealing with seed, germination tests of seeds and certification of seeds.

Box 39 - NR Sales - Rubber Bagasse Prices, RE and DB. 1943-44-45-46. Correspondence, about 800 pages.

NR Sales - Rubber and Rubber Reserve, Prices, 1944-46. Correspondence, about 500 pages.

National Archives - Preliminary Inventory of
Records of Forest Service (Record Group 95).

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Box 40 - (FS-No.20). NR Sales - Seedlings - Mexican Rubber Co. 1945.

NR Seeds - General - CA, 1942, 1943, 1944, 1945, 1946. Correspondence,
Supply, storage, disposal of excess seed supply.

Box 41 - (FS-No.20). NR Statistics:

1. General - 1942 to 1946.
2. Reports of Land Status Records, CA for 1944. Correspondence,
about 300 pages.

Box 42 - (FS-No.20). 1. NR Statistics - Special - 1942 to 1946.

2. NR Supervision - Handbook on Seed, Nursery and Harvesting Operations. 1942 - 1943, 1946.
3. USDA, Forest Service, Pump Manual - No. EM.4. 93 pages, 1944.
4. Preliminary nursery handbook, USDA, Forest Service, October, 1946.
5. Guayule Emergency Rubber Project, Nursery and Seed Handbook, Rev. 1943 and Rev. May - June, 1946.
6. Emergency Rubber Project, Plantation Harvesting, July, 1946.

Box 43 - (FS-No.20). 1. NR Supervision - Committees, Cost - Project Cost-Keeping Information; personnel coordinating committee, Committee on Plans and Integration of Research and Development. Correspondence - about 600 pages.

2. NR Surveys - Topographic - 1943 - 1944.
3. Fumigation of Texas Wild Shrub by G. R. Salmond. August 22, 1943. Correspondence, about 450 pages.

Box 44 - (FS-No.20). Wild Shrub Obligation Report - Wild Guayule in Texas. Correspondence, costs, amounts, maps, harvest. about 1,000 pages.

Box 45 - (FS-No. 20). 1. Harvesting Guayule - Waybills and CBL. - December 2, 1943 - January 23, 1944; September 15, 1943 - November 26, 1943.
2. Truck records of guayule shipments - 1943.
3. Contracts completed and Received.
4. Expenditures - Wild Shrub.
5. Records of Guayule Shrub Received in Salinas.

Box 46 - (FS-No.20). 1. Daily Shrub Handling Report (Hastings).

2. Texas Wild Shrub Obligations.
3. Texas Wild Shrub, 1943-1944. Correspondence and records.
4. NR - Yield - General - CA, 1944.
5. PS and CSI, Salinas - Soledad - Field data.

Box 47 - (FS-No.20). NR - Yield - Field Data. PS and CSI - Tracy Newman - Los Banos, Newman, Patterson, Vermalis and Westley 12/1943.
PS and CSI - Bakersfield - Lamont, Lerdo. 1/1944.

Box 48 - NR - Yield - Field Data:

PS and CSI - Bakersfield-Shafter, Wasco. 1/44.
PS and CSI - So. CA - Beaumont, 1/44.
PS and CSI - Colusa - Arbuckle, 2/44.

Box 49 - NR - Yield - Field Date - 2/1944:

PS and CSI - Colusa - Chico, Wildwood and woodland.
PS and CSI - Salinas - Chalar, Gonzales, Greenfield, Pioneer, Soledad.

Box 50 - NR - Yield - Field Data:

PS and CSI - Tracy Newman - Los Banos, Newman, Patterson, Vernalis,
Westley, 2/44.
PS and CSI - Bakersfield - Lamont, 4/44.

Box 51 - NR - Yield - Field Data:

PS and CSI - Bakersfield - Lerdo, Shafter, Wasco, 4/44.

Box 52 - NR - Yield - Field Data - 4/44:

PS and CSI - Colusa - Arbuckle, Chico, Wildwood and Woodland.
PS and CSI - Salinas - Gonzales, Greenfield, Pioneer, Chualar.

Box 53 - NR - Yield - Field Data:

PS and CSI - Bakersfirld - Wasco, 8/44.
PS and CSI - Salinas, Soledad, 4/44.
PS and CSI - So. CA - Beaumont, 4/44.
PS and CSI - Tracey Newman - Los Banos, Newman, 4/44.

Box 54 - NR - Yield - Field Data:

PS and CSI - Tracy Newman - Patterson, Vernalis, Westley, 4/44.
PS and CSI - Salinas - Pioneer, Greenfield, 8/44.

Box 55 - NR - Yield - Field Data:

PS and CSI - Salinas - Soledad, 8/44.
PS and CSI - Tracy Newman - Newman, 8/44.
PS and CSI - Tracy Newman - Los Banos, Patterson - Preharvest Sampling,
10/44.

Box 56 - NR - Yield - Field Data:

PS and CSI - Tracy Newman - Patterson #23 and Newman #33 and #34, 10/44.
PS and CSI - Tracy Newman - Vernalis - Preharvest Sampling - 10/44.
PS and CSI - Bakersfield - Wasco #8, 11/44.

Box 57 - Tract Maps:

1. Bakersfield District.
2. Salinas District.
3. So. CA District.
4. Colusa District.
5. Tracy Newman District.
2. PS and CSI - Chemical Analysis:
 1. First Sampling.
 2. Second Sampling.
 3. Third Sampling.
3. PS and CSI - Chemical Sampling - August - December, 1944.
4. PS and CSI - Chemical Sampling - January - June, 1945.
5. Sample date forwarding sheets - Salinas - S-series.

Box 5^a - PS and CSI - Yield -

1. Request for check analysis and results.
2. Sample data forwarding sheets.
3. Mill Tests, Assay lab.
4. Spacing Check (Tracts x Spacings).
5. Competition Stress Analysis.
6. Soil Mats.
7. Soil Comparisons.

Box 5^b - PS and CSI - Yields - Covariance Analysis:

1. Defoliation Dry weight and Leroeni Rubber Content.
2. Green Weight and Rubber Content.
3. Crown Volume and Rubber Content.
4. Crown Volume and Defol. Dry Weight.
5. Green Weight and Defol. Dry Weight.

Box 6^a - PS and CSI - Yields - I. Covariance:

1. Crown Diameter and Rubber Content.
 2. Plant Height and Rubber Content.
 3. Stem Cross-section and rubber content.
 4. Survival and Rubber Content.
 5. Survival and Defol. Dry Weight.
 6. Stem cross-section and Defol. Dry Weight.
- II. Multiple Correlations.
- III. Variability within Plots.
- IV. Sampling Error Analysis.
- V. Sampling Intensity Comparisons.
- VI. Leaf Weight Determinations.
- VII. Survival
- VIII. Graphical Comparisons.

Box 6^b - PS and CSI - Yields:

1. Yield Tables, about 400 pages.
2. Volume Groupings for Yield Tables, about 1,000 pages.

Box 6^c - PS and CSI - Yields - Field Date - Preharvest - Bakersfield - Lamont (8/45); Lredo (5/45); Shafter #1 (5/45).

Box 63 - PS and CSI - Yields - Field Date - Preharvest. Bakersfield -
Shafter #2 (5/45); Wasco (5/45).

Box 64 - PS and CSI - Yields - Field Date:

1. Regular Study - Bakersfield - Wasco (6/45).
2. Special Study - Bakersfield (7/45).
3. Bakersfield - Circle Ranch, Wasco (9/45).

Box 65 - PS and CSI - Yields - Field Data - Preharvest.

Tracy Newman - Los Banos - 8/45; Vermalilis (8/45); Newman (8/45);
Patterson (8/45).

Bakersfield - Shafter, Special Study (8/45); Colusa-Chico (8/45).

Box 66 - PS and CSI - Yields - Field Data - Preharvest. Colusa - Arbuckle
(8/45); Wildwood (8/45 and 10/45).

Box 67 - PS and CSI - Yields - Field Data - Preharvest:

Tracy Newman - Vermalilis (9/45); Patterson (9/45); Newman (9/45).
Salinas - Greenfield (10/45).

Box 68 - PS and CSI - Yields - Field Data - Preharvest:
Salinas - Gonzales (10/45); Pioneer (10/45).

Box 69 - PS and CSI - Yields - Field Data - Preharvest:
Salinas - Pioneer (8/45); Greenfield (11/44).

Box 70 - PS and CSI - Yield - Field Data - Salinas - Soledad #102, #102a and
#103 (12/44).
So CA - Beaumont (8/45 and 9/45).

Box 71 - PS and CSI - Yield - Field Data.

So CA - Beaumont (Phillips) (9/45).

So. CA - San Clemente, Preharvest (9/45).

Bakersfield - Lamont, Preharvest, (1/45); Shafter, Preharvest (1/45).

Box 72 - PS and CSI - Yield - Field Date:

Bakersfield - Wasco, Preharvest (1/45).

Bakersfield - Wasco #8 (Regular Study) (1/45).

Tracy Newman - Check Sampling (1/45).

Box 73 - PS and CSI - Yields - Field Data - Preharvest Sampling:

Tracey Newman - (1/45); Patterson (3/45); Vermalilis (3/45).

Salinas - Spence (Special pH Sampling) (2/45).

Salinas - Check Sampling (2/45).

Box 74 - PS and CSI - Yields - Field Data - Preharvest Sampling:
Tracey Newman - Newman (3/45); Lamont (5/45).
Bakersfield - Wasco #8, Regular Study, Circle Ranch (4/45).

Box 75 - PS and CSI - Yields - Field Data - Preharvest;
Bakersfield - Lerdo (5/45).
Correspondence of FS and CSI.

Box 76 - FS and CSI - Yield:
1. Work Plans.
2. Consignment letters.
3. Equipment.
4. Spacing Check - Bakersfield.
5. Spacing Check - Colusa.
6. Spacing Check - Salinas.
7. Spacing Check - So. CA.

Box 77 - FS and CSI - Yield:
1. Spacing Check - Tracy Newman.
2. Cultural Data - Bakersfield.
3. Cultural Data - Colusa.
4. Cultural Data - Salinas.

Box 78 - FS and CSI - Yield:
1. Cultural Data - So. CA.
2. Cultural Data - Tracy Newman.
3. Cultural Data - Vernalis.
4. Planting date and spacing comparisons
5. Field Data - Bakersfield - Lamont (11/43).
6. Field Data - Bakersfield - Lerdo (11/43).

Box 79 - FS and CSI - Yield - Field Data:
1. Bakersfield - Shafter (11/43); Wasco (11/43);
2. So. CA - Beaumont (11/43).

Box 80 - PS and CSI - Yields - Field Data:
Colusa - Arbuckle (12/43); Chico (12/43); Wildwood and Woodland (12/43).
Salinas - Chualar (12/43); Gonzales (12/43); Greenfield (12/43); Pioneer (12/43).

Box 81 - I. Personnel - Efficiency Ratings.
II. NR - Land - Maps. Prospective Areas - gross appraisals:
1. Bakersfield District.

2. Charlotte and Poteet Areas.
3. Chino Area.
4. Coalinga - Pleasant Valley Area.
5. Guadalupe Co., Texas.
6. Hemet Valley.
7. Knippa - Sabinal Area;
8. Los Banos Area.
9. Bexar and Atascosa Cos.
10. Medina Co., Texas.
11. Lower Rio Grande Valley.

Box 82 - NR - Land - Prospective Areas - Gross Appraisals:

1. Mesilla Valley.
2. Pearsall, Dilley Areas.
3. Riverside District.
4. Salinas Valley - Greenfield Area.
5. Salt River Valley.
6. Santa Ana District.

Box 83 - NR - Land:

- I. Prospective Areas - Gross Appraisals:
 1. Santa Maria Valley.
 2. Ventura County.
 3. Hidalgo and Willacy Cos., Texas.
 4. Wilson Co., Texas.
- II. Leasing Procedures - 1942, 1943, 1944.
- III. Leasing - General - Master List of Land leases, 1942 - 1943.

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(Record Group 95) Records for Div. of Watershed
Management, 1939-1950. Lot #74, Gen. Records.

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- Box 911- 1. NR Rubber - Correspondence.
2. Rubber - Congressional Material - Document 205; USDA Appropriations for 1951 - Hearing (Part 2); Extending the Rubber Act of 1948 (F.I. 469, 80th Congr.); Interim Report on: Surplus Property Rubber - Document No. 230 and 240; Senate Res. 224 (1942).

Box 912- Emergency Rubber Project - Guayule.

1. Final Report - December, 1946, 234 pages.
2. The Processing of Guayule for Rubber, by H. W. Taylor, 1946, 59 pages.
3. Miscellaneous Reports on Guayule:
 - Guayule Development prior to 1942.
 - Growing rubber in CA.
 - Studies on germination of guayule seed.
 - guayule, a rubber-plant of the Chihuahuan Desert, Carnegie Publ. No. 139, 1911.

Box 913- NP Assay Methods - Guayule. 1943 - 1945 - 1947.

- Box 914- I. NR Control - Diseases.
 1. Diplodia - in guayule.
 2. Guayule Plantation Diseases and their control - August, 1944.

II. NR Control - Insects.
 1. Program of work for Fiscal Year 1946.
 2. Prevention and control of Grasshopper infestation - March, 1943.

III. NR Control - Weeds.
 1. Use of Oil for the Control of Summer Weeds.

IV. NR Control - General.
 1. Root-knot Nematode infection of guayule - March, 1944. (S-127-44).
 2. List of Insects and Arachids associated with guayule in the Salinas Valley of CA during 1942, by Harry Lange, Jr.
 3. Some diseases of the guayule plant, Parthenium argentatum, by W. N. Ezekiel. January 15, 1942.

V. NR - Cooperation BAIC - Correspondence - about 500 pages.

Box 915- I. NR - Cooperation - BPIS & AE - 1942 to 1945.

1. Correspondence - about 150 pages.
2. Monthly Report of Guayule Project - Sattills, Coah., Mexico - Indicator Plantings.
3. Agreement regarding guayule - BPIS & AE with Forest Service.

- II. NR - cooperation - E & PQ (Entom. & Pl. Quar.), correspondence - about 40 pages.

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- III. NR Cooperation - Form Security Adm. - Guayule. Circular 26(K-4). 1943.
- IV. NR. Navy - Mare Island. Report of tests of a Soft Gasket Stock prepared from resiniflersus guayule rubber. 1942. Report No. 15-6. Correspondence with Navy (Mare Island) - about 400 pages. 1942-45.

Box 916- I. NR Cooperation - Bureau of Reclamation (Central Valley Project). Correspondence - about 800 pages - maps, reports, 1942 - 44.

II. NR Cooperation - Rubber Development Co. Correspondence - production costs, maps, etc. - about 60 pages.

III. NR Cooperation - Rubber Reserve Corp. - Correspondence - Reconstruction - Finance Corporation - 1945 - about 350 pages.

IV. NR Cooperation - Soil Conservation Service - Div. of Irrigation - 1942-43; Correspondence - about 35 pages.

V. NR Cooperation - War Department - 1944. Regards land use at Salinas Army Airbase.

VI. NR Cooperation - War Relocation Authority (Emersons work at Manzanar). Correspondence, reports - about 250 pages.

Box 917- Guayule - Correspondence - 1942-46.

- I. NR cooperation - Argentina - about 500 pages.
- II. NR Cooperation - Australia - about 600 pages.
- III. NR Cooperation - China - about 20 pages - 1943.
- IV. NR Cooperation - Mexico - about 700 pages.
- V. NR Cooperation - Russia - about 700 pages - 1945.

Box 918- I. NR Cooperation - Russia - about 500 pages, 1942-44.

II. NR Cooperation - General - about 1,500 pages.

Box 919- I. NR Cooperation - Continental - Mexican Rubber Co. - 1942-45. About 500 pages. Correspondence.

II. NR Cooperation - General Tire and Rubber Co. 1943-45. Correspondence, about 200 pages.

III. NR Cooperation Agreements.

IV. NR Extraction - Milling. 1942 - 1945. Correspondence, about 75 Pages.

V. Report - A comparison of the Jordan Mills and the Small Pebble Type Mills (M-5123). November, 1944, by K. W. Taylor.

Box 920- Correspondence.

I. NR Extraction - Milling - Problem Assignments. 1943.

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- II. NR Extraction - General - 1942-45.
- III. NR Finance - Allotments, guayule, 1945-46.
- IV. NR Finance - Allotments - General. 1942-45. about 250 pages.
- V. NR Finance - Appropriation, incl. estimates. Rescission Bill, 1946. About 250 pages.
- VI. NR Finance - Appropriations - 1942-46. About 200 pages.
- VII. NR Finance - Authorization - 1942-44. About 150 pages.

Box 921- I. NR Finance - Disbursements - 1942-45.

- II. NR Finance - Estimates 1947-48 - Guayule - About 350 pages.
- III. NR Finance - Estimates 1946 - Guayule, About 1,200 pages.

Box 922- NR Finance - Estimates - 1944-46, Guayule, Correspondence, Reports, About 1,200 pages.

Box 923- NR Finance - Estimates - Guayule. 1943. About 1,200 pages.

Box 924- NR Finance - Estimates - 1942-44. Guayule, etc. About 1,200 pages.

Box 925- I. NR Finace - Estimates - General. 1942-44. About 200 pages.
II. Report of Audit, Salinas, CA Records of Intercontinental Rubber Co. and its Subsidiaries. 1925 - 1941.
III. NR Finance - General - Correspondence - About 450 pages.
IV. NR - Fiscal Control - About 300 pages - Correspondence.
V. NR - Harvesting General - Guayule - 1943-45. Correspondence, reports; about 250 pages.
VI. NR Harvesting - Guayule, Texas Wild Shrub - 1943-44 - Correspondence, reports, costs. About 250 pages.

Box 926- I. NR Improvements - Mill Construction, 1942-1945. Correspondence, diagrams. About 150 pages.
II. NR Information - Addresses (Speeches).
III. NR Information - Censorship, Guayule. 1942-45. About 120 pages.
IV. NR Information - Motion Pictures - 1942-45. Correspondence, about 800 pages.
V. NR Information - Photographs - 1942-46. Correspondence, 400 pages.

Box 927- I. NR Information - Press Releases - 1942-45. About 400 pages. Copies of releases.
II. Guayule, A list of references. Compiled by Alan J. Blanchard. Library List No. 10. July, 1944. USDA Library. 61 pages.
III. Guayule: A list of references. Compiled by Alan J. Blanchard. Soil Conserv. Bibliogr. No. 4. April, 1942. 54 pages.

Box 928- I. Progress Reports from the Rubber Director.

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- II. Guayule - A rubber plant of the Chihuahuan Desert, Carnegie Publ. No. 139, 1911.
- III. Compiled reports on Mexican guayule rubber (with photographs).
- IV. Guayule - Mimeographed report prepared for Poage Committee, December 22, 1944.
- V. A report on the guayule project of the USDA. March 20, 1944.
- VI. Articles, brochures, etc. on guayule - about 250 pages.
- VII. NR Information - Publications - Guayule - Correspondence mostly, about 300 pages; a few actual publications. 1942-46.

Box 929- NR Information - Articles, brochures, etc., misc., about 800 pages.

Box 930- NR Information - Radio, about 100 pages. Scripts, etc. 1942-46.
II. NR Information - Special, guayule. 1943-44.
III. Articles, brochures, etc, misc., about 600 pages.

Box 931- I. NR Information - Special, Guayule. BPI Data prior to FS Administration. 1942. About 130 pages.
II. NR Information - General, Guayule. 1942-43. About 800 pages.

Box 932- I. NR Information - Guayule General (Public) A - Z. 1942. About 600 pages. Mainly correspondence.
II. NR Inspection - General Guayule. 1942-45. Inspection reports , correspondence. About 125 pages.
III. NR Irrigation - General. Correspondence. About 50 pages.
IV. NR Land - Disposal. 1943-46. Correspondence. About 70 pages. Maps.

Box 933- I. NR Land - Leasing Guayule - 1942-46. Correspondence, leases, cancellations, etc. About 600 pages.
II. NR Land - Leasing Guayule - Hemet Valley - 1943.
III. NR Land - Leasing Guayule - Santa Maria Valley - 1943.
IV. NR Land - Prospective Areas - Guayule, 1942-43. About 70 pages, maps.
V. NR Land - Prospective Areas - Guayule, Tabulated offers of land. About 350 pages.

Box 934- I. NR Land Purchase - 1943-45. About 30 pages.
II. NR Legislation - Federal (Corres). 1942-46. About 600 pages.
III. NR Legislation - Federal (Excerpts from Federal Register and Congressional Record). 1943-46.
IV. Public Laws - ERP.
V. Bills and Reports - Appropriations, ERP. 1942-44.

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Box 935- NR Legislation:

- I. Bills, Reports, Hearings - Establishment of ERP and planting of guayule acreage.
- II. Hearings - Appropriations 1945-46, Congressional Committee hearings - ERP.
- III. Bills and Reports, 1945-46. Appropriations, ERP.
- IV. Hearings - Appropriations, 1942-44, Congressional Committee hearings, ERP.

Box 936- NR Legislation:

- I. Reports and Hearings - Special Committee Investigating Nat. Defense Program. (Truman).
- II. Hearings - Congressional Committees - Misc.
- III. Hearings - Congressional Committee - American Small Business.

Box 937- NR Legislation:

- I. Senate and House Misc. Bills, Reports, etc. of interest to ERF, includes Poage Bill and Report.
- II. NR Library, General, 1942-46.
- III. NR Maps, General Guayule, 1942-1945.

Box 938- NR Mill Operation - General. Lay-out of factories; 1943-46;

1. Bakersfield Mill - efficiency and product quality reports, operational reports; 1945-46.
2. Spence Mill, Salinas - efficiency and product quality reports, operational reports. 1943-46.

Box 939- I. NR Nurseries - General - 1942-45. Seedlings, weed control; Correspondence. About 100 pages; nursery construction. 1946.
II. NR Organization - General. 1942-45. Diagram, charts, some correspondence, about organization chart.
III. NR Patents - General - 1942-46. Copies of patents, correspondence, etc. About 400 pages.
IV. US Patents and License acquired from Intercontinental Rubber Co.
V. Guayule Statistics - August 18, 1945.
VI. NR Plans - Proposed, Navy Research Program - 1946. Correspondence, about 70 pages.

Box 940- I. NR Plans - Liquidation - 1945-46. Correspondence, about 400 pages.
II. NR Plans - Objectives, Report for Rubber Director; about 800 pages.
III. NR Plans - Objectives, Poage Bill, Guayule Program. 1945. About 300 pages.
IV. NR Plans - Objectives, Guayule. 1942-45. About 600 pages.

- Box 941- I. NR Plans - Proposed Research and Development Program. 1945-46.
About 100 pages.
II. NR Planting - Investigations, guayule, 1942-44. About 300 pages.
III. NR Planting Plans - 1942-43. Maps and correspondence.
IV. NR Planting Plans - Texas, 1943. Maps and correspondence.

- Box 942- I. NR Planting - General, Guayule. 1942-45. Planting Areas; maps;
correspondence.
II. NR Processing - General, Guayule. Bigasse. 1942-44.
III. NR Property - General - 1945-46.
IV. NR Quarters - General - 1942-45.

- Box 943- I. NR Resources - Guayule. 1943-44.
II. NR Sales - Rubber. 1944-46. Correspondence, about 300 pages.
III. NR Sales - Seed and Seedlings, 1944-45. Correspondence, about
400 pages.
IV. NR Seed - General - 1942-46. About 250 pages.
V. Guayule seed and sowing investigations. Forest Service.

- Box 944- I. NR Seed - Tests. 1942-44. Correspondence and reports. About 100
pages.
II. Guayule Production Costs - BPIS & AE, January 1945.

- Box 945- I. NR Statistics - Reports, Guayule. 1942, 1943, 1944, 1945, 1946.
About 550 pages.
II. The Processing of Guayule for Rubber, 1946.
III. Material furnished by the Project to the Trumbull Committee during
survey made during April, 1945.
IV. Summary Economic Report On the Rio Grande Plains Regions of Texas
by J. Wesley White. April, 1945.
V. The Wild Guayule Situation in Mexico. By Cooperrider and Culley,
November, 1942.
VI. Reports on Guayule Research Project, by Richard E. Baker, 1943.
VII. Analysis of Samples from Indicator Plots taken in February, 1944.
By R. L. Holmes, June 1944.
VIII. Report on Inspection of Guayule Rubber Industry, by D. D.
Eisenhower. June 6, 1930.
IX. Guayule - Informal Interim Report, July 30, 1943.

Box 946- NR Statistics - Reports:

1. Guayule Plantings of USDA. August 10, 1943.
2. Quick Survey of Guayule Rubber Production from the Emergency
Rubber Project of USDA. April 30, 1945. "Trumbull Report to
Rubber Reserve."
3. Guayule, the magic native US Rubber Shrub that offers untold
future potentialities. Agric. Trade Relations, Inc. January 1,

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4. 1946. 75 pages.
4. The Propagation of Guayule. USDA, Forest Service, ERP, 1946, 85 pages.
5. Guayule - Response to soil moisture under dry-land culture in CA. USDA, Forest Service, ERP, 1946, 59 pages.
6. Studies in Guayule Yields, USDA, Forest Service, ERP, 1946, About 100 pages.
7. Soil - Guayule Relationships; Salt Tolerance of Guayule. USDA, Forest Service, ERP, 1945. 55 pages.
8. Climate and guayule culture. USDA, Forest Service, ERP, July, 1946. 17 pages, 32 figures.

Box 947- Nothing in Box 947 on guayule.

- Box 948- I. NR Statistics - Guayule, Climatological data. 1942. Charts, Reports, Correspondence.
II. NR Statistics - General, 1942-46. Correspondence, about 500 pages.
III. NR Studies - General, 1942-44; costs, areas, correspondence; about 400 pages.
IV. Report on the possibilities of guayule in the Southwestern U.S. from the Standpoint of Climate, by Malcolm A. Murray.
V. NR Studies - Work Simplification, 1943-44.
VI. NR Supervision Meetings, 1942-45; Second Interamer. Conf. of Agric. (1942).

- Box 949- I. NR Supervision - Passports. 1942-45.
II. NR Supervision - Correspondence with Rubber Director, 1942-45.
III. NR Supervision - General, 1942-44.
IV. NR Supervision - Poage Committee Investigation and copy of hearings - April 6, 1944.

Box 950- NR Supervision - General Guayule, 1945-46. Correspondence, about 600 pages.

NR Supervision - General Guayule 1944. Correspondence, about 800 pages.

Box 951- NR Supervision - General Guayule 1943. Correspondence, about 500 pages.

NR Supervision - General Guayule 1942. Correspondence, about 800 pages.

NR Supervision - General Guayule, Public. 1942-44. Correspondence, about 900 pages.

Box 952- I. NR Supervision - Guayule - CA State Guayule Rubber Committee, Salinas Junior Chamber of Commerce. 1943-46. Correspondence, reports, illus., about 600 pages.

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- II. NR Supervision - Guayule in Food Production Program. 1942-44.
Correspondence, about 80 pages.
- III. NR Supervision - General Guayule, Noe Greenhouses, 1943. Propagation of guayule rooted cuttings.
- IV. NR Supervision - General Guayule, Dr. Spence's Experiments, 1942.
- V. NR Supervision - Trumbull Committee, Survey by Rubber Research, 1945.

Box 953- I. NR Supply - Guayule - 1942-45. Correspondence, about 600 pages.
II. NR Surveys Soil - Guayule - 1942-43. Maps.

Box 954- I. NR Surveys - Special, Mexico. 1942-44. Correspondence, about 200 pages.
II. NR Surveys - Special, Texas Guayule, 1942-44. About 100 pages.
III. NR Surveys - Mill Sites, Guayule, 1943.
IV. NR Yield - General - 1942-46. Correspondence, charts, & tables.

No. 154. Photographic Negatives relating to the emergency Rubber Project.
1941-45. 2 ft.

Approximately 900 film negatives illustrating the seeding and raising of guayule rubber in the United States and Mexico. Included is a separate list of the captions arranged in the corresponding numerical order.

No. 155. Mounted Photographs relating to the Emergency Rubber Project.
1941-45. 3 ft.

Approximately 300 mounted prints corresponding to some of the negatives described in entry 154. Arranged alphabetically by name of State in which the photographs were taken.

No. 156. Lantern Slides relating to the Emergency Rubber Project. 1941-
45. 1 ft.

561 color slides, showing the production of guayule rubber in the United States and Mexico. Arranged numerically.

101 - 102, 103

101-102, 103 - 104, 105
good bottom water does not allow the
105

106-107 water current not so strong vertical circulation 107, 108
108 109-110

109 water not so much mixing with the atmosphere.
110-111 about 100 meters below the surface always be violent
111 convection and the surface follows the gall stage at all
112 times 113

113-114 water current not so violent atmospheric layer 114, 115
115 116-117

116 the wind is well developed when between 200-300 meters
117-118 atmospheric pressure, 118 when the bedrock is very
119-120 hard and the water is very turbulent and there is little
121-122 development of the current not so violent as the wind. 121, 122
123-124 water current not so violent as the water 123-124
125-126 atmospheric pressure which has a small
127-128

